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AlvariSTAR

User Manual

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Document History

Topic	Description	Date Issued
Version 4.0 is regarded as the first publication.		December 2008
Single platform for NMS and Local CRAFT Utility	The manual covers both AlvariSTAR and AlvariCRAFT. Unless otherwise stated, The features are applicable to both applications.	Version 4.1, March 2009
Password Policy	New feature enabling to set a policy for all passwords.	Version 4.1, March 2009
Watchdog	External application for monitoring the NMS server, LDAP and database servers	Version 4.1, March 2009
Context Menus	New approach in accessing most of the functions via right click menus instead of buttons.	Version 4.5, September 2009
Dynamic Column Selection	Ability to select which columns are displayed in tables and to pack columns in order to fit into the available space.	Version 4.5, September 2009
Filters	Enhanced Filter Criteria Manager now allows aggregating multiple selection criteria within the same filter and using negated selection criteria.	Version 4.5, September 2009
File Manager	New manager for handling files stored in the database.	Version 4.5, September 2009
View Filters	Quickly switch between various types of equipment that are displayed in the Equipment Manager and the various types of files that are displayed in the File Manager.	Version 4.5, September 2009
Summaries	Real time summary counts at the bottom of the Equipment Manager and File Manager.	Version 4.5, September 2009
Task Creation	New wizard transforms task creation into a 3 step process.	Version 4.5, September 2009
Remote Access	Web Portal for launching any application in StarSuite and ability to access the AlvariSTAR server via the Java Web Start software framework.	Version 4.5, September 2009
The Equipment Manager	Updated	Version 4.5, October 2009
The Unified (All Network Elements) View	Column structure updates	Version 4.7, June 2010
The Equipment Editor	Column structure updates	Version 4.7, June 2010

Topic	Description	Date Issued
Discovery Settings Manager	Restructured	Version 4.7, June 2010
NBI Notifications Global Settings	New feature	Version 4.7, June 2010
Discovery Task	Renamed Range Discovery Task. Added SNMP versions: v1, v2c, v3.	Version 4.7, June 2010
External Entities Mapping	New feature	Version 4.7, June 2010
User Domain Manager	New feature	Version 4.7, June 2010
Configuration Management	New chapter	Version 4.7, June 2010
Appendix C	New appendix describing how to connect the NMS to an external LDAP server	Version 4.7, June 2010
Appendix D	New appendix describing how to use Google Earth to view the network's topography	Version 4.7, June 2010
Appendix E	New appendix describing SNMP version compatibility for each supported device	Version 4.7, June 2010

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About AlvariSTAR

AlvariSTAR is a comprehensive, Carrier-Class Network Management System (NMS) for Broadband Wireless Access products-based networks. AlvariSTAR is designed for today's most advanced service provider Network Operation Centers (NOCs), providing the network OA&M staff and managers with all the network surveillance, monitoring and configuration capabilities required in order to effectively manage the network while keeping the resources and expenses at a minimum.

AlvariSTAR provides the following network management functionality:

- Equipment Management, allowing viewing of devices according to various search criteria, access to devices' dependent features, such as device configuration managers and maps, access to the Configuration Backup Task for creating backup files for a selected device, exporting general information of selected devices to a Commas Separated Value (CSV) file, and other tasks according to the managed device family.
- Single and Multiple Device Management, allowing comprehensive configuration and management of devices.
- Location Management, allowing definition and organization of hierarchical locations and associating them with maps and other attributes.
- Discovery Settings, allowing management of device discovery for identifying and adding existing devices to the managed devices database.
- Active Events, providing alerts and real-time updates of defined alarms.
- Event History Management, providing the ability to query for alarms in specific time intervals.
- Event Template Management, allowing customization and management of event templates according to specific preferences and needs.
- Event Forwarding to other Network Management Systems.
- Topology, providing Geographical hierarchical topology views for selected objects.

- Task Management, allowing definition and scheduling of system-wide background tasks, including:
  - Network Discovery, allowing to scan the network for new devices
  - Database Aging, allowing automation of database management tasks.
  - Range Discovery, allowing to scan a predefined range of IPs for new and modified devices.
  - Additional product line dependent tasks according to the installed Device Driver(s)
- File Management, enabling to restore, import, and export configuration backup files.
- Contact Management, allowing definition of contact persons and attributes to be associated with selected devices.
- License, allowing to add and view the information about valid licenses for managing devices.
- Security Management, allowing management of users, user groups, functional permissions and passwords.
- Audit Logs, allowing viewing of logged events.
- User Session Monitor, displays information on the currently logged in users and enables sending messages to a logged in user.

Certain additional features are applicable only for certain product lines. For information about these features refer to the applicable *Device Driver Manual*.

Embedded with the entire knowledge-base of WiMAX network operations, the management system is a unique state-of-the-art power multiplier in the hands of the service provider that enables the provisioning of satisfied customers. AlvariSTAR dramatically extends the abilities of the service provider to provide a rich portfolio of services and to support rapid customer base expansion.

NOTE

This manual describes the general features of the management system. To manage specific product families, refer also to the applicable *Device Driver Manual*.

About AlvariCRAFT

AlvariCRAFT is a PC or Laptop based Graphical application based on the same user interface available for AlvariSTAR. AlvariCRAFT is designed for field technician use, enabling simple and intuitive Graphical Local Craft Terminal (LCT) for managing and configuring a single device type in the field.

This utility simplifies the installation and maintenance of small size deployments by easily enabling the change of settings or firmware upgrade for one modular Base Station or Micro Base Station at a time, including the managed device's components and associated SUs (if applicable).

The AlvariCRAFT utility includes all the functions of AlvariSTAR that are applicable to the management of a single device.

About This Manual

This manual describes the AlvariSTAR management system (referred to as Network Management System) and the AlvariCRAFT Local CRAFT Utility. The manual describes the full functionality of the Carrier-class management system and presents screen captures of the AlvariSTAR application. Unless otherwise stated, the descriptions apply to both applications.

Limitations on AlvariCRAFT due to the single device restriction are noted in a Note specific to the application, as follows:

LOCAL CRAFT NOTE

This feature is not applicable to the Local CRAFT Utility.

This User Manual comprises the following chapters:

- Chapter 1- Introduction - provides an overview of the AlvariSTAR and AlvariCRAFT systems and their functionality.
- Chapter 2 - Managed Network - describes how to access the management functions for managing the system: Equipment Manager, Location Manager, and Discovery Settings.
- Chapter 3 - Fault Management - describes the tools for managing events generated in the system: Active Events, Event History, Event Filter Manager, Event Template Manager, Script Command Manager and Event Forwarding NBI Manager
- Chapter 5 - Administration - describes the administrative utilities: Task Manager, File Manager, Contacts Manager and License Manager.
- Chapter 4 - Configuration Management - describes features used for integration with Google Earth: CPE Type Selector and File Generation Parameters
- Chapter 6 - Security Management - describes the utilities for managing the user permissions and access rights for AlvariSTAR and AlvariCRAFT users:

Audit Log Manager, User Manager, User Profile Manager, and User Session Monitor.

- Appendix A - Watchdog - describes the Watchdog application used for monitoring the NMS, database and LDAP servers.
- Appendix B - Remote Access - Describes the WebStart functionality.
- Appendix C - Connecting to an External LDAP Server - Describe how to connect AlvariSTAR to an LDAP server.
- Appendix D - Google Earth Management - Describes how you can visualize the network's topography in Google Earth.
- Appendix E - SNMP Compatibility - Describes SNMP version compatibility for each supported device.

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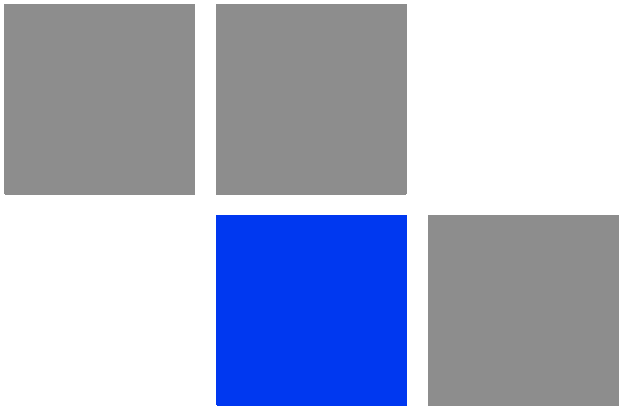
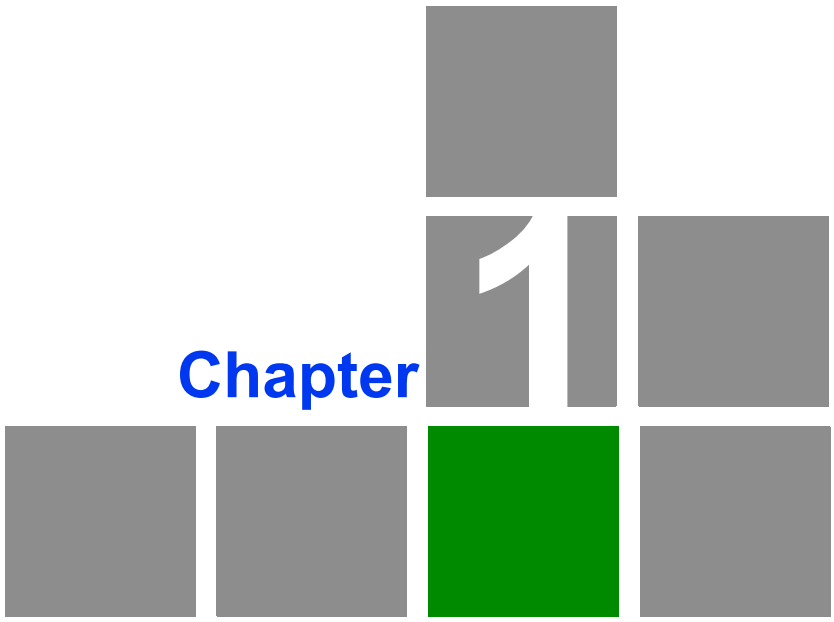




Chapter 1

Introduction

In This Chapter:

- "Starting AlvariSTAR" on page 3
- "Starting AlvariCRAFT" on page 10
- "The About Window" on page 18
- "The Main Window" on page 12
- "Conventions and Common Operations" on page 20

1.1 Starting AlvariSTAR

This section describes the necessary steps to start the AlvariSTAR management system. For a description of the AlvariCRAFT utility, go to Section 1.2.

The management system enforces security at the client level. To log in to the application, you must have a valid user ID and password.

Before you can run this application your system must have running Application, and Database Server. Typical installations implement the Application Server so it runs in the background, even after you log out of the client. See the *Installation Manual* for information about installing and configuring these required server processes (called *services* in Windows, *daemons* in Solaris).

1.1.1 Post Installation Checklist

Before starting the client application, verify the following:

1.1.1.1 License

The default demo license is valid for 90 days and includes licenses for two management system clients and a certain amount of managed devices. It does not support licensed features.

To obtain a permanent license, contact your product reseller. To load and activate licenses, see "License Manager" - Section 5.5.

1.1.1.2 Device Configuration

To discover and properly manage devices, certain parameters must first be properly configured in the managed devices. For details refer to the relevant *Device Driver Manual*.

1.1.1.3 SW Upgrade Files

Software Upgrade files for the managed devices need to be stored on the Application Server in the management system firmware repository folder located under <management system>\filesystem\firmware\<product-line>. The product line name is device dependant (refer to the relevant Device Driver User Manual)

NOTE

The firmware repository folder is created automatically for certain device drivers. For other device drivers it should be created manually.

Use forward slashes in UNIX systems.

1.1.1.4 SNMP Ports

Verify that the SNMP ports (161, 162) are not used by any other application running on the computer. If Windows or any other SNMP Server is installed, open the Windows Service Manager, stop the SNMP Services and disable it to ensure that it will not start automatically the next time you restart the computer.

1.1.1.5 Security Enforcement

The Administrator should define users, user groups, passwords and functional permissions (refer to Chapter 6).

1.1.2 Quick Start

The following is an overview that covers the basic steps for getting started with the management process. Refer to the respective chapter in this manual or, when applicable, in the relevant Device Driver Manual) for an in-depth explanation of each step.

1. Design the equipment location hierarchy. Define locations and sub-locations and associate them with maps if applicable. (Refer to Section 2.2.)
2. Define security policy and assign permissions to users/user profiles. (Refer to Chapter 6)
3. Open the Discovery Settings Application. Enter the necessary IP address ranges, locations and SNMP parameters. Define all other applicable parameters and initiate discovery. (Refer to Section 2.3 for information on using the Discovery Settings application and Section 5.2.4 for information on running the Network Discovery task for equipment discovery.)
4. After devices are discovered and stored in the database, you can fully use the application to manage the system:
   - Use the Equipment Manager to view devices in the database according to various search criteria. From the Equipment Manager you can access the devices' dependent Configuration and Multiple Configuration managers and topology maps. (Refer to the relevant Device Driver Manual.)
   - Use additional managers that may be applicable only for certain product lines to manage different features and parameters that are product line dependent.

- Use the Location Manager to design and manage hierarchical locations and associate them with maps. (Refer to Section 2.2.)
- Use the Contact Manager to define contact persons and attributes to be associated with selected devices. (Refer to Section 5.4.)
- Use the Task Manager to define and schedule general system-wide tasks and various additional tasks according to the managed product line. (Refer to Section 5.2 and the relevant Device Driver Manual).
- Use the Files Manager to restore, import, and export configuration backup files generated via the Configuration Backup task (Refer to the relevant Device Driver Manual).
- Use the Database Aging Task to manage alarm records. (Refer to Section 5.2.5.)
- Use the License feature to view information on licensed vs. discovered devices, enabling you to estimate when you need to update your license. (Refer to Section 5.5.)
- Use the User Session Monitor feature to identify other currently active users and communicate with them. (Refer to Section 6.5.)
- Use the Audit Log Manager to view logged events. (Refer to Section 6.2.)
- Use Active Events to view alarms and other events in real time. (Refer to Section 3.2.)
- Use the Event History to query the database for events and alarms in specific time intervals. (Refer to Section 3.3.)
- Use the Event Forwarding NBI Manager to interface with other Network Management Systems. (Refer to Section 3.7.)
- Use the Script Command Manager to create script commands that can be triggered by template-matched alarms.

5 Modify the threshold number of rows stored in the alarm table if necessary. (Refer to "Database Aging Tasks" - Section 5.2.5.) By default 50000 rows are displayed and the Database Aging task is scheduled to run every hour.

1.1.3 Starting the Client

To start the application:

From the Windows Start menu, select *<Management System name>* "Management System"> *Start Client*. After the client application is started, the Login prompt window will be displayed.

1.1.4 Logging In

To log in, type a valid user name and password at the login prompt, as follows:

Default User Name	Default Passwords
admin	admin
manager	manager
observer	observer

By default, you have five attempts to enter the correct password before the system aborts the login.

Figure 1-1: Login Prompt

1.1.5 Logging Out or Shutdown

Logging out keeps the application running but disable access to the client, preventing unauthorized persons from using it. You may log in again without the need to restart the client.

The Exit feature, however, shuts down the client application, while the Application Server continues to run.

To log out of the system

1. From the Main Menu at the top of the window select System> Logout. A confirmation message is displayed.
2. Click **OK** to confirm.

3 Only the Main Menu of the client is displayed. Only the System and Help menus are available.

To log in again after logging out

From the Main Menu at the top of the window select System > Login. The Login prompt window will be displayed, allowing you (or another authorised user) to log in.

To shut down the client:

1 From the main menu select *System* > *Exit,* or, use the X icon displayed on the right upper corner of the main window, or use the *Alt+F4* shortcut. A confirmation message is displayed.

2 Click **OK** to confirm.

1.1.6 Changing the Password

By default, there are no password constraints. By using Change Password, the current logged-in users can change only their own password.

To change the password:

1 From the main menu, select *System* > *Change Password*. The Change Password dialog is displayed.

2 Enter the old password.

3 Enter the new password (8-32 characters). Confirm it.

4 Click **OK** to save the new password.

Figure 1-2: Change Password Dialog

Passwords constraints are set from the Security Management > Password Policy menu

The password policy also determines when the user receives a password expiration warning.

1.1.7 Suspended Accounts

Users with a suspended account cannot access the system. An account can be suspended by the administrator, or is blocked according to the Login Policy settings set in the Password Policy window. The Login Attempts parameter sets the number of unsuccessful login attempts before the user is locked out (default: five attempts). The account can be re-activated by the system administrator.

Only the system administrator can activate suspended and blocked accounts. The default admin user is never blocked.

To activate an account:

1. Open the User Manager window.
2. Select the suspended user and click **Edit**.
3. Select **Security Info** and change it to Active.
4. Click **OK** to apply the changes.

1.1.8 Application Server

The application server, which typically runs on a dedicated host, enables the system to process incoming alarms and communicate with equipment and

network devices. If the client application cannot connect to an application server, a warning message appears and the client is not launched.

1.2 Starting AlvariCRAFT

To log in to the application, you must have a valid user ID and password.

To open AlvariCRAFT:

1 Double-click on the AlvariCRAFT icon or open it from the windows Start menu (Programs>AlvariCRAFT>Start Craft). The Network Interface Chooser opens.

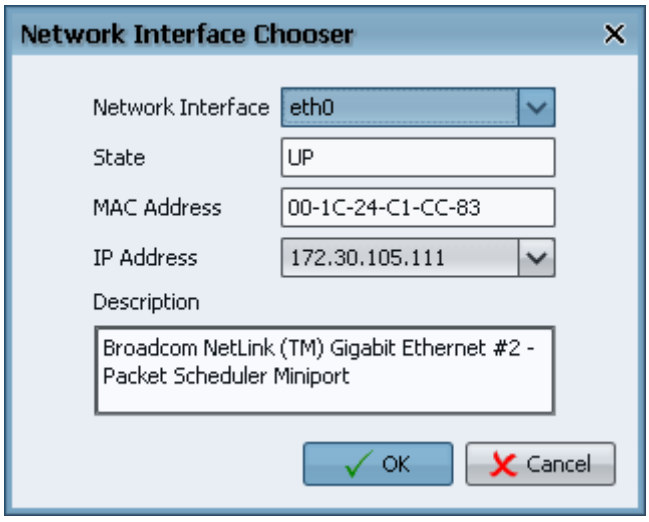


Figure 1-3: Network Interface Chooser

The Network Interface Chooser enables to select the IP address of the computer on which the Local CRAFT Utility is installed. The Network Interface Chooser includes the following fields:

Field	Description
Network Interface	A list of the available network interface cards (NIC) installed.
State	The state of the selected network interface. Only network interfaces that are UP are displayed.
MAC Address	The MAC Address of the selected NIC. For the local loopback NIC, no MAC address is displayed.
IP Address	The IP address associated with the selected NIC.

Field	Description
Description	A read-only description of the selected NIC.

2 In the Network Interface Chooser, select a network interface from the list.

3 Click OK. The Main window opens.

1.3 The Main Window

After logging on, the main window is displayed, providing access to all functions.

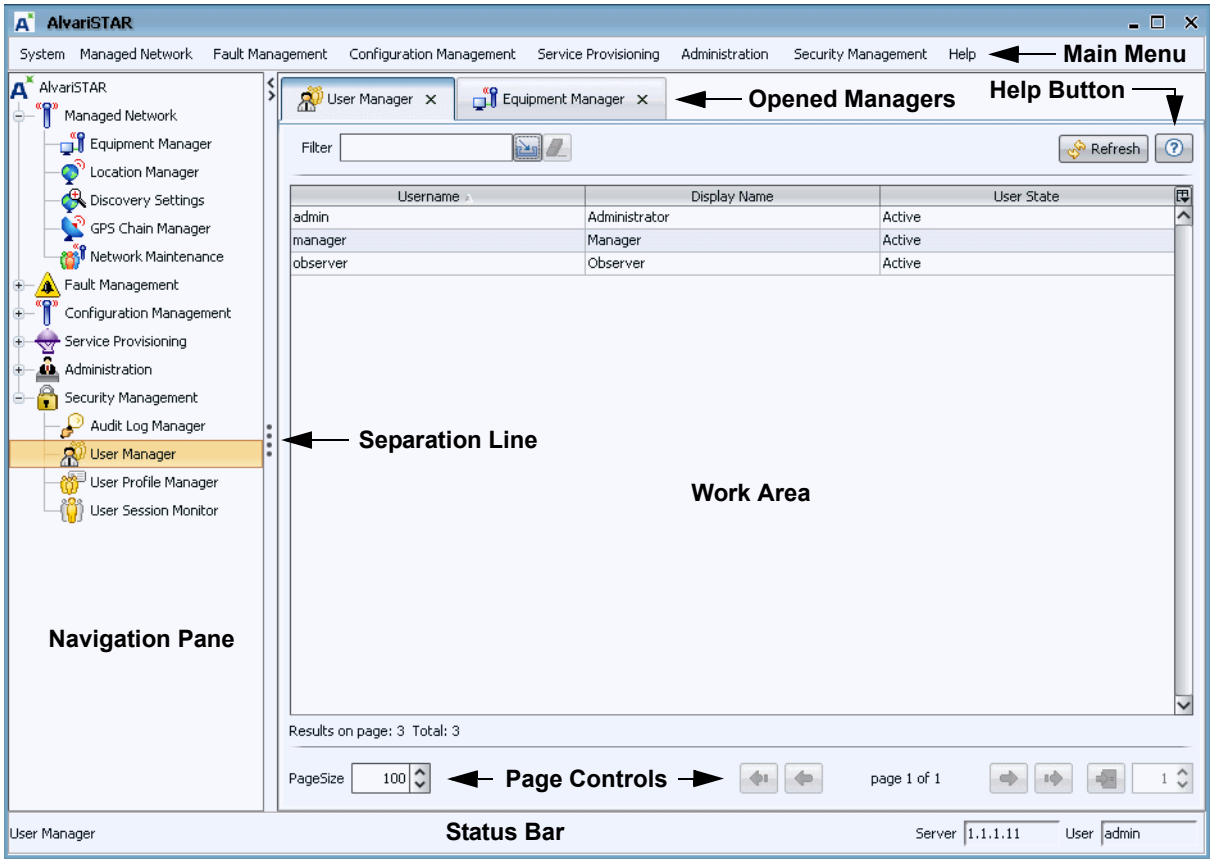


Figure 1-4: The Main Window

1.3.1 Main Menu

The main menu contains all menus and their options, which provide access to the management system functions. It mirrors all the functions available in the Navigation Pane (see Section 1.3.4).

In addition, the Main Menu includes the following menus and options:

Menu	Description
Help	Provides the following options: ■ About: Enables viewing details about installed system components (see Section 1.4). ■ Help Contents: Opens the WebHelp contents window.
System	Provides the following options: ■ Login: Enables logging in to the client application. Applicable after logging out (refer to Section 1.1.5) and in the management system, also after time-out. ■ Logout: Enables logging out of the client application without closing it. The application is still running and you may login again (refer to Section 1.1.5). ■ Change Password: Opens the Change Password window enabling to change the user's password (refer to Section 1.1.6) ■ Exit: Enables shutting down the client application.

1.3.2 Open Managers

The Open Managers section displays all the currently open managers.

Click on an open manager name to switch to the window of this manager.

Click on the X sign of an open manager to close it.

1.3.3 Page Control Bar

The Page Control Bar is displayed at all times only for certain windows at the bottom of the window. It contains quick access icons for some common operations.

Figure 1-5: Page Control Bar

When the number of results in the manager exceeds the number defined in the *Page Size* box, the results are divided into several pages. Use the following controls to browse the various pages:

Icon	Description
	Help - Opens the Online Help Navigator.
	First/Previous - Cycles back to the first or previous page.
	Next/Last - Cycles forward to the next or last page.
	Go to Page - Specify the page number in the box to the right
	Page Size - define the number of results to display in each page

1.3.4 Navigation Pane

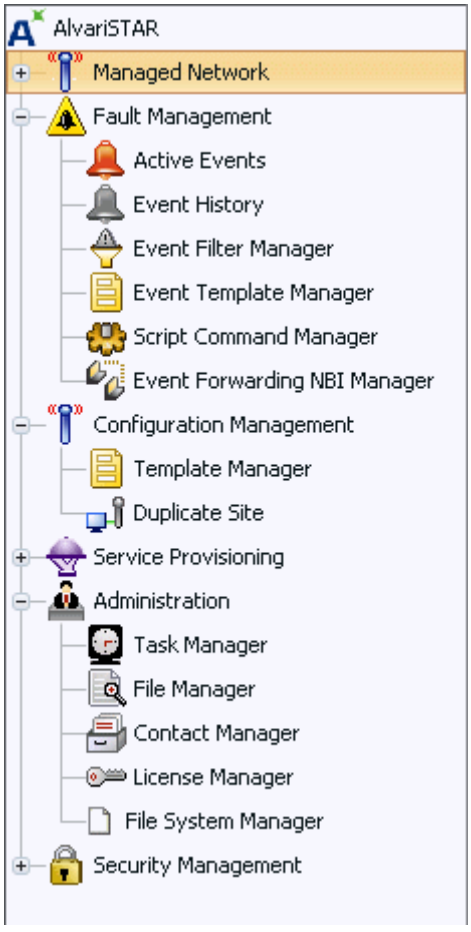


Figure 1-6: Navigation Pane

Click on menu headings to expand that menu node (double click on the menu heading or single-click on the + sign to its right), then click on the appropriate item in that node to display the associated page.

1.3.5 Management Functions

The Navigation Pane and Main Menu provide access to all the management functions. The Navigation Pane and Main Menu options are described below:

NOTE

Certain menus/menu options may be applicable only for certain product lines. The descriptions below are only for menus/menu options that are common to all product lines. Refer to the relevant Device Driver Manual for details on additional menus/menu options that are dependent on the installed device driver(s) and the managed product line.

Node	Description
Managed Network	Provides the following options: ■ Equipment Manager - Opens the Equipment Manager window, enabling to view equipment in the network and access the Equipment Editor. Refer to Section 2.1 and the relevant *Device Driver Manual*. ■ Location Manager - Opens the Location Manager window, enabling to define equipment locations and to associate maps and other features with locations. Refer to Section 2.2. ■ Discovery Settings (not applicable to the Local CRAFT Utility)- Opens the Discovery Settings window, enabling to manage IP address ranges or sub-nets and global SNMP Read and Write community pairs. Refer to Section 2.3.

Node	Description
Fault Management	The Fault Management allows you to manage alarms that occur in the network. It displays information about each alarm and lets you acknowledge received alarms. It also provides tools that help you diagnose and correct alarms. The Fault Manager is divided into the following sub-menus: ■ Active Events - Displays real time updates of new events and alarms entering the system. Refer to Section 3.2. ■ Event History - Queries for alarms and events in the database, according to specified time intervals. Refer to Section 3.3. ■ Event Filter Manager - Allows to create, edit and delete filters to the Active Events/Event History windows. Refer to Section 3.4. ■ Event Template Manager - Allows to create, modify and delete event templates. Refer to Section 3.5. ■ Script Command Manager - Allows to create, edit and delete script commands. Refer to Section 3.6. ■ Event Forwarding NBI Manager (not applicable to the Local CRAFT Utility) - Allows to connect to other management systems and to forward traps related to this system. Refer to Section 3.7.
Administration	Provides the following sub-menus: ■ Task Manager - Enables to define, manage, schedule, run/abort system-wide operations, such as Network Discovery (not applicable to the Local CRAFT Utility), Database Aging, and product line dependent tasks, etc. Refer to Section 5.2 and to the relevant *Device Driver Manual*. ■ File Manager - Opens the File Manager window, enabling to manage configuration backup and other types of files. Functionality depends on the managed product line. Refer to Section 5.3 and to the relevant *Device Driver Manual*. ■ Contact Manager - Opens the Contact Manager window, enabling to organize and manage your contacts. Refer to Section 5.4 ■ License Manager (not applicable to the Local CRAFT Utility) - Enables viewing information about valid licenses and summary details on the currently managed device types, included in the license. Refer to Section 5.5.

Node	Description
Security Management	Provides the following sub-menus: ■ Audit Log Manager - Enables to view recorded events and export the logged data to an external Comma Separated Value (CSV) file. Refer to Section 6.2. ■ User Manager - Enables to create and manage users, and associate information to them such as passwords, profile membership and contact information. Refer to Section 6.3 ■ User Profile Manager (not applicable to the Local CRAFT Utility) - Enables to create user profiles, edit them or delete profiles. Refer to Section 6.4 ■ User Session Monitor (not applicable to the Local CRAFT Utility) - Enables to view information on the currently logged in users and to send messages to a logged in user. Refer to Section 6.5. ■ Password Policy (available only from the Main Menu) - enables to set general policies for user passwords.

1.3.6 Hiding and Displaying the Navigation Pane

By default, both the Navigation Pane and Work Area are displayed. When hovering the mouse over the separation bar between the Navigation Pane and Work Area, the mouse pointer becomes a double-headed arrow (↔). You can change the size of the Navigation Pane by dragging this arrow left/right.

You can hide the Navigation Pane to increase the size of the Work Area or hide the Work area to increase the size of the Navigation Pane by clicking on the arrowheads ( ) located on the separation bar until reaching the required display.

With the Navigation Pane hidden or maximized, if clicking the arrowhead does not restore the display of both panes, manually drag the separation bar to restore the display.

1.3.7 Status Bar

The Status Bar is displayed at the bottom of the main window, and contains the following information:

- Current logged user.

- The IP address of the application server or the selected interface of the Local CRAFT Utility machine.
- The name of the currently open manager.

A progress bar is displayed every time a window is refreshed or a new window is selected.

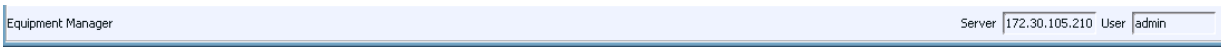


Figure 1-7: Status Bar

1.4 The About Window

The *About* window displays a list of all products installed and their software version.

To open the *About* window, select *Help* > *About* in the Main Menu.

Figure 1-8: About Window

The version numbers of the management system and the installed product line device driver(s) are in the format a.b.c.d, where a.b increases for major releases, c increases for minor releases and d is an internal control number.

1.5 Conventions and Common Operations

The following conventions and common operations appear throughout this manual, unless otherwise specified.

1.5.1 Conventions

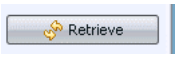
The phrase "Select *Managed Network* > *Equipment Manager* from the Main Menu bar or the Navigation Pane" means you should do one of the following:

- Click on the *Managed Network* menu in the Main Menu bar to expand it, then click on *Equipment Manager*.
- Click on the *Managed Network* node in the Navigation Pane to expand it (if it is not already expanded), then click on *Equipment Manager*.

1.5.2 Control Buttons

A control button causes an immediate action. To activate a control button, click on it. Certain control buttons only appear in selected windows. Others are common to most windows. Equivalent functions to some control buttons are available from the toolbar and main menu.

Button	Description
Apply	Applies changes made in the window. Clicking the Apply button maintains the window opened for the following transaction or response delivery.
OK	Applies changes made in the window and closes the window.
Cancel	Closes the active window without taking any further action. Any modifications made prior to clicking Cancel are ignored.
Refresh	Refreshes the window and displays the most updated information.
Save	Saves changes made in the dialog box.
Help	Displays the online help window.
Browse	The Browse button appears whenever the command's completion may need additional step. Clicking this button displays another window that lets you select an entry for an adjacent field.

Button	Description
Clear	Clears adjacent fields. It appears next to a field with a Browse button at the other end.
Retrieve 	Displays all appropriate matches according to the selected filter. It can also be used to refresh the display.

Some of the control buttons, such as *Edit*, *Open*, *Import* and *Export* may appear grayed out for users without write permission.

1.5.3 Context Menus

When handling tables in the work area, most of the functions are accessible via right click menus. The contents of these menus are context sensitive. Common functions include:

- New - Adds a new entry to the table
- Delete - Removes an entry from the table
- Edit - Changes the parameters of a particular entry

1.5.4 Working with Tables

All tables and lists allow resizing and rearranging the column display sequence. In some pages, tables are used for displaying information and configuring and managing multiple entities of the same type.

Color conventions:

- Grayed-out cells are read-only.
- In rows with modified parameter(s) all the details are colored blue.
- The new lines added are green
- The lines marked for deletion are red.

To modify the configuration of an existing entity:

1 Double-click on the applicable cell

» In a text-cell, edit the content.

» In some cells a drop-down menu opens, enabling selection of the required option.

2 Click on any other cell to apply the change to the selected cell. At this stage the change only applies to the display.

3 Click **Apply** to apply the change to the device.

1.5.4.1 Dynamic Column Selection

Some of the tables in the work area can be tuned to display only specific columns. Tables that support Dynamic Column Selection have a small button located in the top right corner as shown in Figure 1-9. Clicking this button displays a list of all the columns that are available in the table. Check the columns that you wish to display and uncheck the columns that you want to hide. The following additional options are also available:

- Horizontal Scroll - Displays/Hides the table's horizontal scrollbar
- Pack All Columns - When the table exceeds the width of the available work area, this option attempts to fit it into the available space by reducing the columns' widths.
- Pack Selected Column - Resizes the currently selected column to its minimum width that still fits all its content.

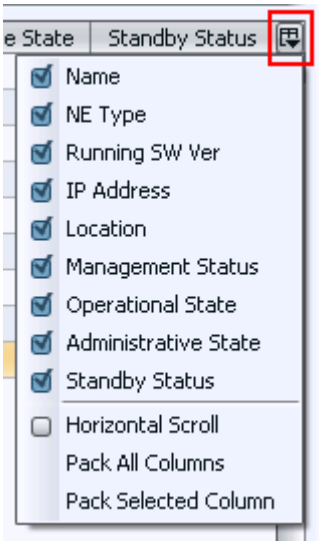


Figure 1-9: Dynamic Column Selection

Alternatively, you can select which columns to display/hide by right clicking the table's header and, from the list that displays, checking the corresponding column names.

1.5.4.2 Sorting Tables

Click on any of the column headings to sort tables. Click again on a column heading to toggle between ascending and descending sort order.

1.5.4.3 Resizing and Rearranging Columns

To resize a column, position the cursor on the border line between two columns headings. The cursor changes into a double-headed arrow. Drag the cursor to the left or to the right to increase or decrease the size of a column. To rearrange column sequence, click a column header and drag it to the new desired position.

1.5.5 Manipulating the Displayed Information

1.5.5.1 Using Filters

Some of the tables support the filtering feature. Filters allow you to set up the table so that it displays only rows that are relevant for your purposes. If a table supports filters, the Filter control displays above it.

Figure 1-10: The Filter Control

The following controls are available:

Button	Name	Description
	Select Filter	Opens the Filter Criteria Manager which allows you to define, edit and apply your filters.
	Remove Filter	Removes the currently selected filter.

1.5.5.1.1 Filter Criteria Manager

Clicking the Select Filter button opens the Filter Criteria Manager (see Figure 1-11). The Filter Criteria Manager contains a table that lists all the available filters. Use the right-click menu to manage and select your filters.

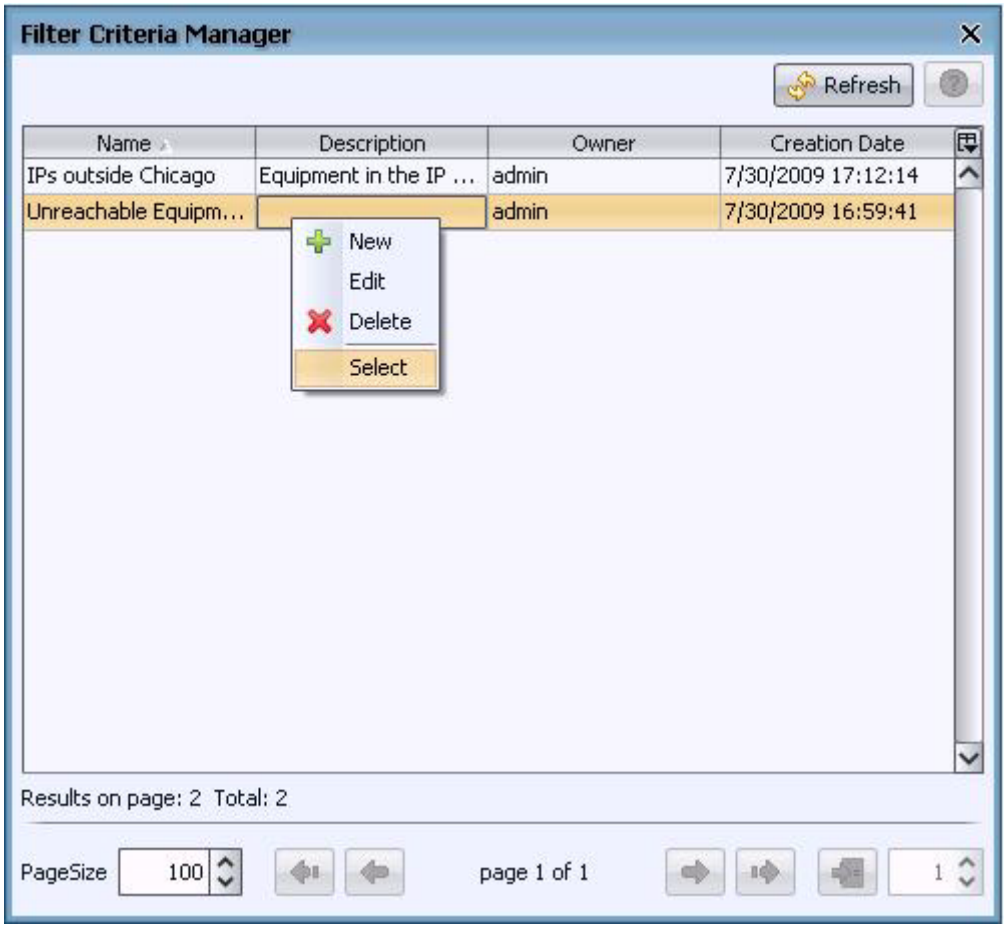


Figure 1-11: Filter Criteria Manager

1.5.5.1.2 Filter Criteria

You define new filters or edit existing filters from the Filter Criteria window (see Figure 1-12). This window is displayed whenever you select the New or Edit option from the right-click menu inside the Filter Criteria Manager.

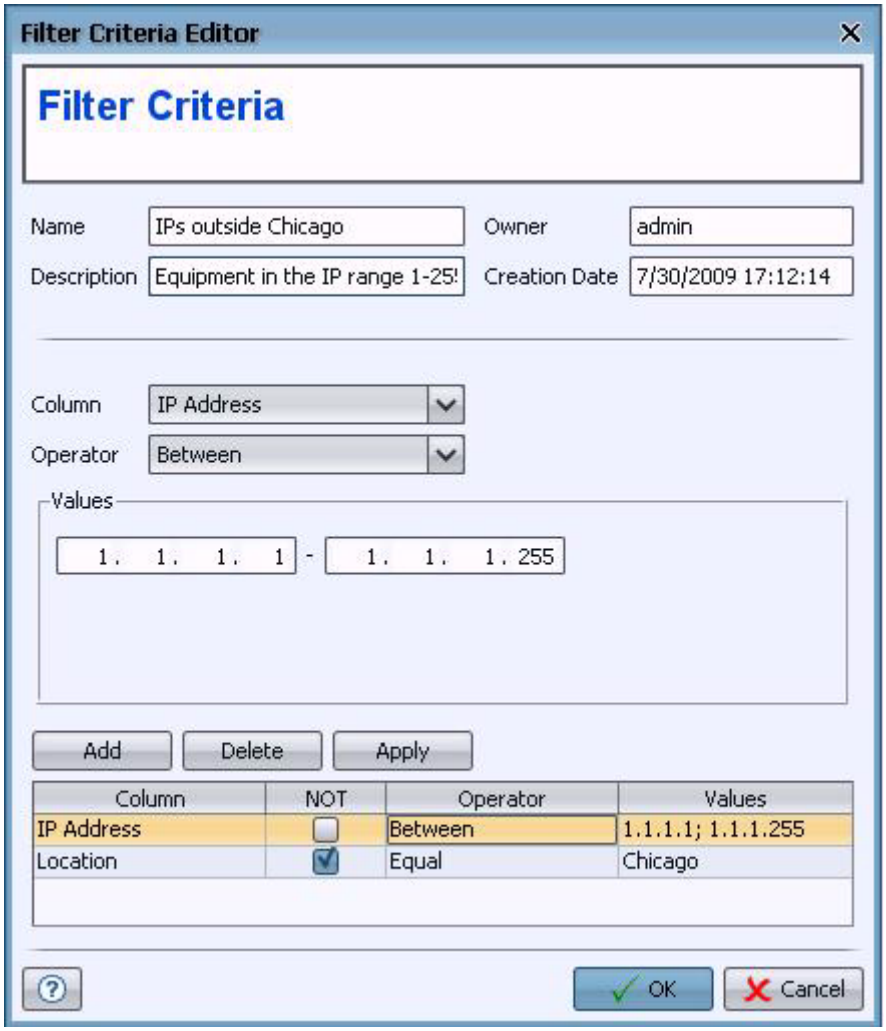


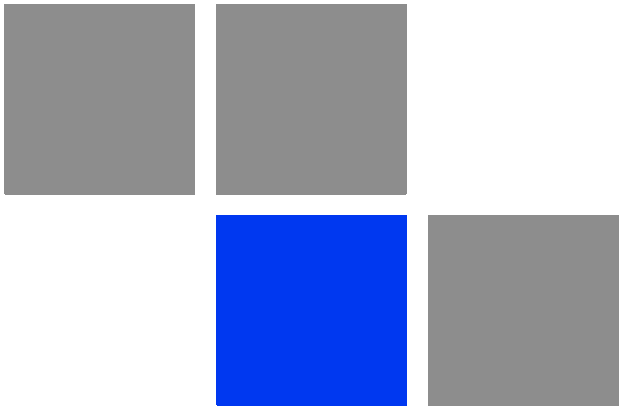
Figure 1-12: Filter Criteria

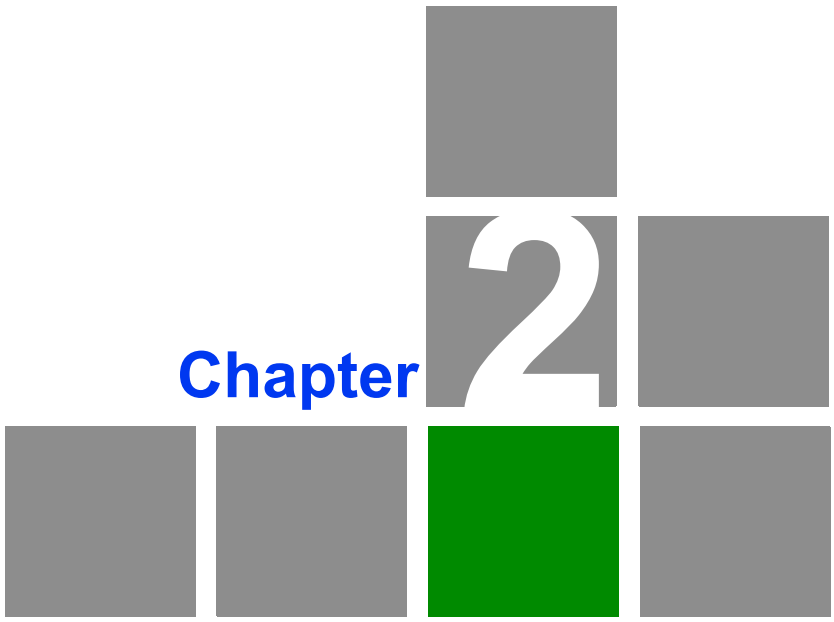
You define a selection criterion by specifying the values which are relevant for the entries in a particular column. Then, press the Add button to include your criterion into the filter criteria list. If you want to use multiple selection criteria, use the above procedure to add additional entries to the list. All criteria in the list are aggregated by applying the logical AND operator between them. This means that only entries which fulfill each and every criterion in the list will be displayed when the filter is applied.

Once a selection criterion is added to the list, you can negate it by checking the NOT checkbox. This is useful when it is easier to define entries that are to be excluded from the selection than those which are to be included.

1.5.5.2 Limiting the Results Set

You can define the maximum number of results to be displayed in a list by entering a number in the *Page Size* box or by using the up and down arrows to the right of the number field. If the results set exceeds the defined number, it will be divided into several pages. Click **Refresh** to refresh the displayed list. Refer to Section 1.3.3 for details on navigating among pages.





Chapter 2
Managed Network

In This Chapter:

- "Equipment Manager" on page 29
- "Location Manager" on page 37
- "Discovery Settings Manager" on page 45 - not applicable to the Local CRAFT Utility

NOTE

This manual *does not cover* some topics, which are device driver dependant. Refer to the applicable *Device Manager Manual* for information about the following features (if applicable):

- GPS Chain manager
- Network Maintenance

2.1 Equipment Manager

This section includes:

- "Introduction to the Equipment Manager"
- "The Unified (All Network Elements) View"
- "The Equipment Editor"

2.1.1 Introduction to the Equipment Manager

The Equipment Manager provides functionality and access to windows that enables you to manage equipment in your network. Using the Equipment Manager in conjunction with the right-click menu you can:

- View devices that exist in the database according to various selection criteria.
- View general information on the displayed devices
- Add and Delete devices to/from the database
- Edit the general properties of devices
- Open the Configure window to configure a selected device
- Apply licenses to selected equipment (not applicable to the Local CRAFT Utility)
- Open a Telnet session for a selected device (if supported by the specific device type)
- Open the Backup Configuration Task to backup the configuration of selected devices (if applicable)
- Export the general information of selected devices to a Commas Separated Value (CSV) file.
- Open a map display associated with a selected device, if applicable.
- Perform additional operations according to the product line and type of managed devices.

To open the Equipment Manager:

Select *Managed Network* > *Equipment Manager* from the Navigation Pane or menu bar. The Equipment Manager window is displayed.

NOTE

Equipment Manager applications running on different NMS clients bound to the same server are notified of the changes made by other clients. The equipment list will be automatically updated whenever another client on the network modifies (adds, deletes or edits) equipment data.

The Equipment Manager can be configured to display only specific types of network elements. This allows you to quickly switch between the various lines of products that you need to manage, according to the installed Device Driver(s). For this purpose, from the *View* drop menu at the top of the work area, select the products type that you would like to be visible. The structure and functionality of the Equipment Manager depend on the selected type of managed equipment. Refer to the relevant Device Driver Manual for details on how to use the Equipment Manager with the applicable devices.

2.1.2 The Unified (All Network Elements) View

Selecting the *All Network Elements* option will display all the BTS units in the database, as well as a summary count at the bottom of the work area. There are two types of summaries you can switch between by right clicking:

- Summary by NE Type - Lists counts for all types of BTS units.
- Summary by State - Lists counts for units that are in the Unmanageable, Unreachable, Unlicensed, Unknown, Unmanaged and Managed states.

The summaries are displayed in a ratio format. The first figure indicates the filtered number of devices, while the second indicates the total number of devices. For instance, if applying a filter excludes 2 devices from a total of 5, the ratio displayed will be 3/5. If no filters are applied, both figures will indicate the total number of devices. In our previous example, this would mean a ratio of 5/5.

The BTS equipment table for All Network Elements includes all the BTS objects that exist in the database of the management system. This includes devices that were discovered by the management system (using either Network Discovery Task or the Range Discovery Task) and devices that were added manually to the database (see **New** option below). The background color of the device's icon is in accordance with the device's alarm status (the highest severity open alarms).

You can use the Filter option for viewing only devices that meet one or several selection criteria.

The information displayed for each device (refreshed every 15 seconds) includes:

Parameter	Description
Name	The BTS Name configured in the device. Applicable only for devices that are Up or that were reached previously.
NE Type	The device's type.
Running SW Ver	The currently running SW version. Applicable only for devices that are Up or that were reached previously.
IP Address	The IP address of the device. Applicable only for devices that are Up or that were reached previously.
Location	The location of the device as defined in the database of the management system, either automatically during discovery (based on settings of discovery parameters) or manually using the Equipment Editor.
Management Status	The management state of the device: ■ Managed - The equipment is answering to keep-alive/polling and synchronization. ■ Down - Available only for CPEs. Equipment is reported as down. ■ Unreachable - A device that the management system is aware of (exists in the database) but cannot be reached currently. ■ Unknown - This is typically a temporary status for a device that is available in the database but has never been reached in the past and its current status is unknown. After a short time its status should change to one of the other options. ■ Unlicensed - If the number of devices of a certain type in the database has reached the number of licenses for managing the specific device type, additional devices of this type added to the database will be presented as unlicensed. These devices cannot be managed by the system. The License button in the Equipment Manager will be available upon selecting unlicensed object(s), allowing to install additional licenses. ■ Unmanageable - Equipment is reachable but cannot be managed from various reasons: wrong SW version, synch errors, no route, manual unmanage, etc. ■ Unmanaged - Operator does not want to manage an equipment, although it is discovered.

Parameter	Description
Standby Status	This column indicates a device's backup related behavior. The following statuses are available: ■ Providing Service - The backup resource is providing service and is backing up another resource. ■ Hot Standby - The resource is not providing service, but is operating in synchronism with another resource that is to be backed-up (e.g., a computer shadowing another computer). A resource with a hot standby status will be immediately able to take over the role of the resource being backed up, without the need for initialization activity, and will contain the same information as the resource to be backed up. ■ Cold Standby - The resource is to backup another resource, but is not synchronized with that resource. A resource with a cold standby status will not be immediately able to take over the role of a resource being backed up, and will require some initialization activity.

The available management options depend on the selected device type(s). Select one or several entries and right-click to view the available management options. The following options are available for all device types:

Option	Description
New	Adds a new equipment object to the database. Click to open the Equipment Type selection dialog box. Select the type of equipment to be added (available options depend on the installed Device Drivers) and click **OK**. The Equipment Editor opens, allowing to enter general information on the BTS to be added. For more details, see "The Equipment Editor" on page 34. NOTE: The New option is available when right-clicking anywhere in the work area, without the need to select any existing entry.
Configure	Opens the Device Manager for the selected device. Not available if two or more devices are selected or if the State of the selected device is other than Up. NOTE: You can also open the Device Manager by double-clicking on the selected device.
Edit	Opens the Equipment Editor for the selected equipment object(s), allowing to edit general parameters. For multiple selected devices you can edit only the Location and Contact parameters. For a single device you can edit also some general SNMP parameters. For more details, see "The Equipment Editor" on page 34.

Option	Description
Delete	Deletes the selected equipment object(s) from the database. The application prompts you for confirmation. You can always rediscover deleted equipment.
License	Activated only when unlicensed equipment is selected. If the number of devices of a certain type in the database has reached the number of available licenses for managing the specific device type, additional devices of this type will be presented as unlicensed. These devices cannot be managed by the system. Select the License option to open the License Manager, enabling to view the current status of available licenses and add licenses if necessary.
Cut Through	Opens a Telnet session to the selected device. Not available if two or more devices are selected or if the State of the selected device is other than Up.
Open Map	Opens the location map, displaying the selected map for the applicable location. Available only when a location is assigned to the selected device. Not available if two or more devices are selected.
Open Alarms	Not available if two or more devices are selected or if the State is other than Up. Opens the Open Alarms window, displaying the details of currently active events,
Unmanage	Manually switch a device's management status to Unmanaged
Manage	Attempt to revert a manually unmanaged device to its normal management status.
Backup Configuration	Not available if two or more devices are selected or if the State is other than Up. opens a Configuration Backup Task for the selected device, where you can add additional devices to the task. Refer to the Configuration Backup Task section in the relevant Device Driver Manual.
Export	Not available if two or more devices are selected. Exports the general information of the selected device to an external Comma Separated Value (CSV) file. Opens the Exports Equipment dialog box in which you can browse to the desired location, enter a file name, and click **Export**. The information displayed for the selected device in the Equipment Manager is exported.

Additional management options are available for a single device, according to the specific product line of the selected entry. For details refer to the Equipment Manager section in the relevant Device Driver Manual.

LOCAL CRAFT NOTE

The Equipment Manager in the Local CRAFT Utility enables managing a single BTS. There is an exception for point-to-point equipment, allowing the user to discover both devices.

To manage a new device when a device already exists in the Equipment Manager, you must delete the existing entity before adding the new one. Otherwise the new entity will be added with Unlicensed State. To apply a License to the new entity, you must first delete the “older” one.

After performing the necessary changes, click Retrieve to update the display.

2.1.3 The Equipment Editor

The Equipment Editor enables editing NMS Reference (Location and Contact) and SNMP parameters of a selected device. For multiple devices, it only enables editing the NMS Reference (Location and Contact) parameters. It also enables defining the parameters of a new device that you wish to add to the database.

The Equipment Editor for all device types includes the following parameters:

Parameter	Description
General	
Name	This field displays the network element’s name.
Location	The location associated with the device in the database of the management system (optional). Click on the Browse icon to open the Select Location window and select a location. Click the Eraser icon to clear the Location field.
Contact	The contact associated with the device in the database of the management system (optional). Click on the Browse icon to open the Select Contact window and select a contact. Click the Eraser icon to clear the Contact field.
Area Type	The type of environment the network element is located in. This feature is useful for estimating and displaying the sector coverage in Google Earth (see Appendix D for more information). The available options are: ■ Urban ■ Suburban ■ Rural
GPS Status	Indicates the GPS status for network elements which support GPS cards.
Latitude	Use this field to manually enter the network element’s latitude coordinate. Use positive values for Northern latitudes and negative values for Southern latitudes.
Longitude	Use this field to manually enter the network element’s longitude coordinate. Use positive values for Eastern longitudes and negative values for Western longitudes.
Altitude	Use this field to manually enter the network element’s altitude in meters.
SNMP Parameters (applicable only for a single device editor)	

Parameter	Description
Version	Indicates the SNMP protocol version used for communicating with the device. The available options are: ■ v1 ■ v2c ■ v3 For a complete list of all compatible SNMP versions for each device, see Appendix E.
Agent Address	The device's IP Address. Not configurable when editing the properties of an existing object.
Port	The port number used by the device to communicate with the NMS. Not configurable when editing the properties of an existing object.
Retries	The maximum number of retries for SNMP/TFTP communication with the Device. The range is from 0 to 255. The default is 2 retries.
Timeout(s)	The maximum time in seconds that the requesting process waits for a response from the Device before attempting a retransmission (or aborting if the maximum number of retries has been reached). The available range is 1 to 3600 seconds. The default is 15 seconds.
Read community (only for SNMP v1 and v2c)	The Read community string (password) for SNMP get operations. This string is used by the SNMP agent to allow/disallow SNMP read access. The default Read community string in Base Station/Micro Base Station equipment is *public*.
Write community (only for SNMP v1 and v2c)	The Write community string (password) for SNMP set operations. This string is used by the SNMP agent to allow/disallow SNMP write access. The Write community can also be used for read (get) operations. The default Write community string in Base Station/Micro Base Station equipment is *private*.
Username (only for SNMP v3)	Username used for authentication

Parameter	Description
Security Level (only for SNMP v3)	Configures the authentication and privacy settings. The available options are: ■ NoAuth_NoPriv - Both authentication and privacy are disabled ■ Auth_NoPriv - Authentication is enabled and privacy is disabled ■ Auth_Priv - Both authentication and privacy are enabled
Authentication Algorithm (only for SNMP v3)	Selects the hashing algorithm applied to the authentication password. The available options are: ■ MD5 - Uses the Message-Digest algorithm 5 ■ SHA - Uses the Secure Hash Algorithm
Authentication Password (only for SNMP v3)	Password used for authentication.
Privacy Algorithm (only for SNMP v3)	Encryption standard used for data transmission. The available options are: ■ AES - Uses the Advanced Encryption Standard ■ DES - Uses the Data Encryption Standard
Privacy Password (only for SNMP v3)	Encryption key used by the privacy algorithm

2.2 Location Manager

The Location Manager enables to specify information regarding the physical location of managed equipment, to facilitate quick detection of managed objects and to help drill down quickly when using maps to view specific equipment components.

You can specify equipment locations within the Location Manager. Note that a location can have a “Parent” Location, meaning that it belongs to a subset of another location. For example, if network objects are on the third floor of a facility, you can designate both the building and the specific floor as locations; the building would be the parent of the floor. You may define multiple levels for locations. In the current example, the city in which the building is located can be defined as the parent location of the building, and so on.

To associate a single device with a location or several devices with a single location, open the Equipment Editor for the device(s), click the **Browse** button next to the Location field to open the Select Location window and select a location. For further details, refer to Section 2.2.2.

To use the Location Manager:

1 Select *Managed Network* > *Location Manager* from the *main* menu or the Navigation Pane. The Location Manager window is displayed.

2 Select one or more locations from the list.

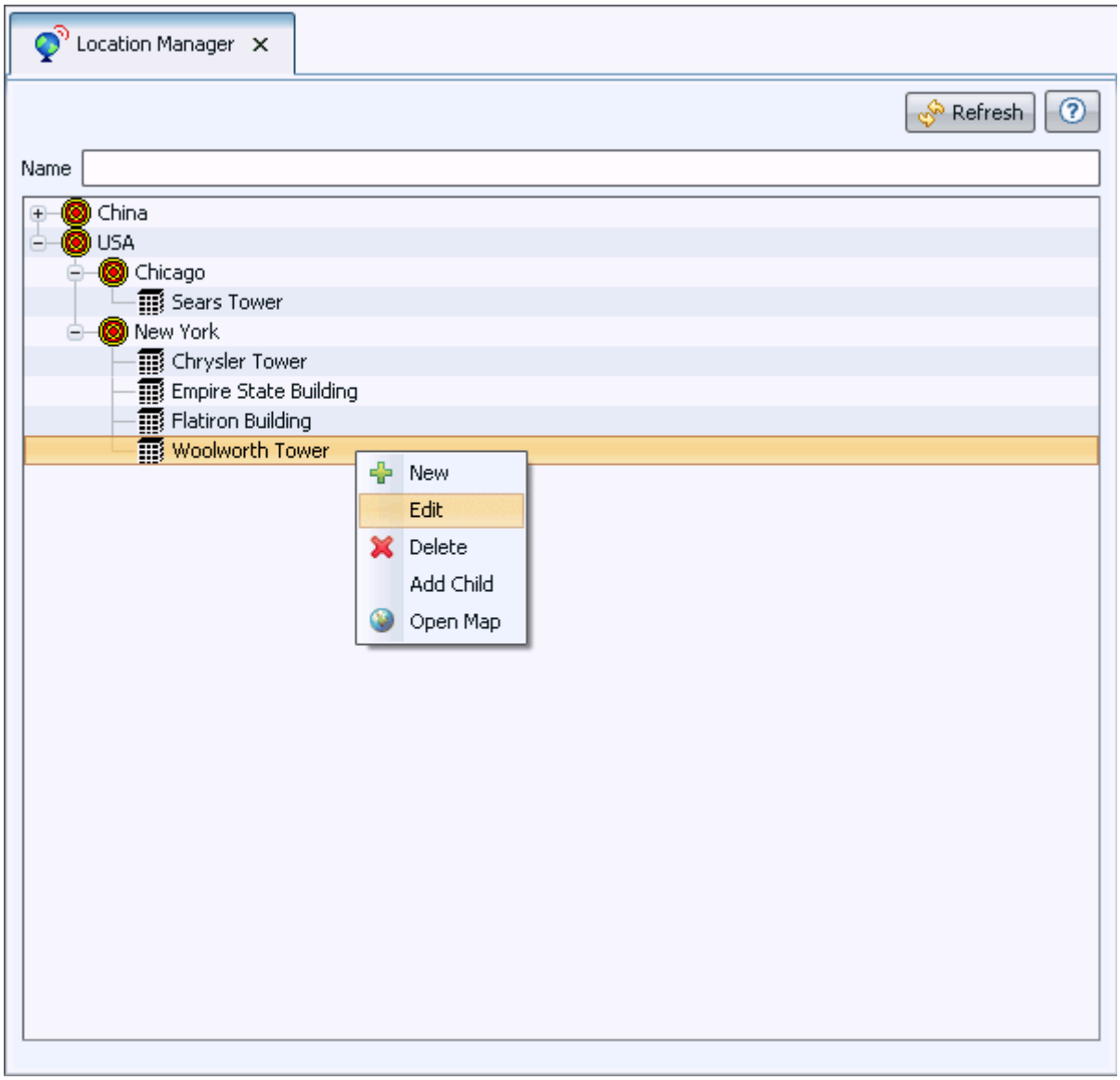


Figure 2-1: Location Manager

3 Use the following commands from the right click menu for various actions in the Location Manager:

Menu item	Action
New	Opens the Location Editor, through which you can define a new location. Refer to Section 2.2.2, for more information

Menu item	Action
Edit	Opens a Location Editor for a selected location, enabling you to modify the definition of the Location. See Section 2.2.2 for more information.
Delete	Enables to delete the selected location(s). When deleting a parent location, the application also deletes its associated child locations. A location associated with equipment cannot be deleted.
Add Child	Opens the Location Editor, through which you can define a new child location that will be subordinate to the selected location. When creating a child location, the name of the parent location field is displayed in the Parent field.
Open Map	Opens the Location Map, displaying the selected location. See Section 2.2.4 for more information.

2.2.1 Searching for a Location

To search for a specific location, enter the full name of the location (for example: California) or part of the name (Ca) in the *Name* field. Only locations matching that specification appear. Note that the filter is case-sensitive and the results are displayed immediately.

2.2.2 Location Editor

The Location Editor enables to create a new location or modify details of an existing location.

To create/modify a location:

1 In the Location Manager, right-click inside the work area and select **New** to create a new location, or, to edit an existing location, right click a location from the list and select **Edit** or double-click on the selected location. The Location Editor is displayed.

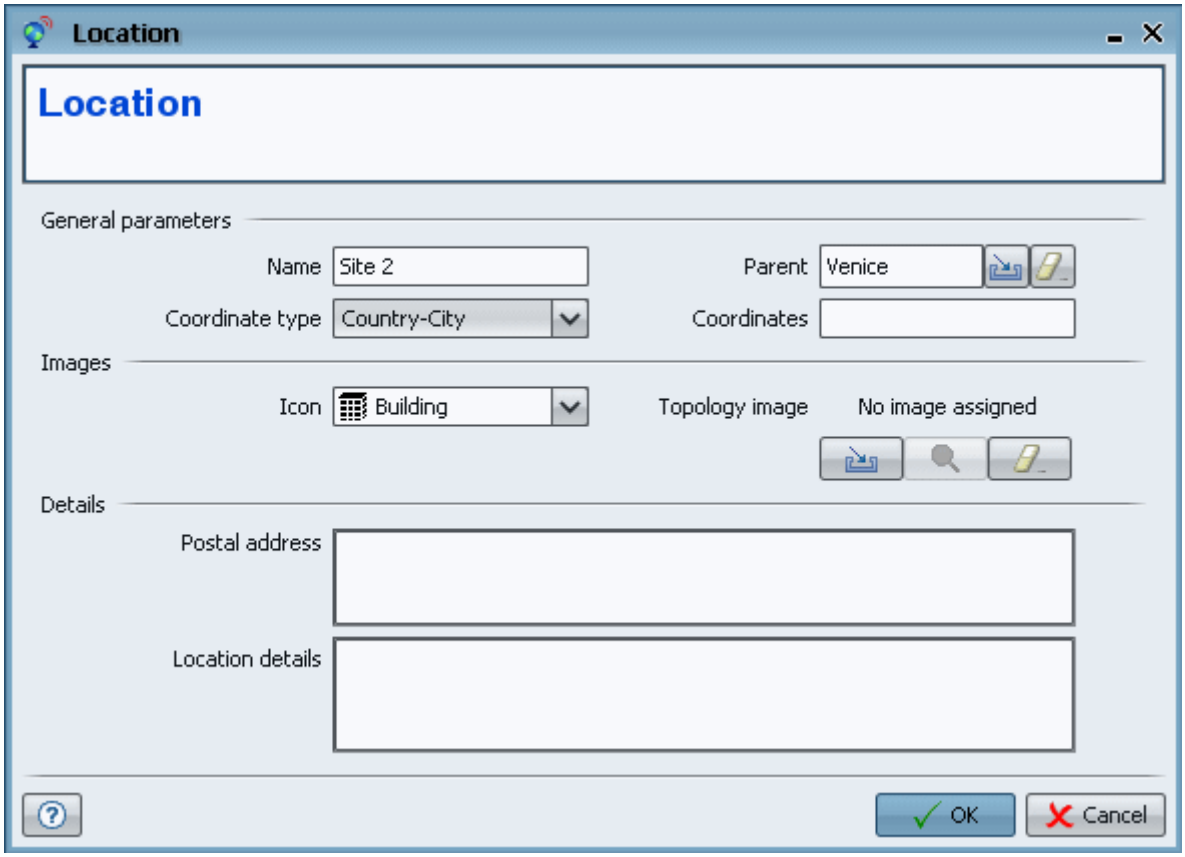


Figure 2-2: Location Editor

2 Type in or modify the Location Editor fields as required:

Parameter	Description
General parameters	
Name	Enter a unique name for the Location, up to 32 printable characters. This is the name that will be used for searching.
Parent	The parent of this location (the location to which this location is subordinate). Click the **Browser** button to open the *Select Location* window through which you can select a Parent Location. Click the **Eraser** icon to clear the Parent Location field.
Coordinate Type	Specifies the way coordinates are designated; see Section 2.2.3 for more information. Valid types are: Country-City, Latitude-Longitude, Area Code-prefix, Vertical-Horizontal.

Parameter	Description
Coordinates	The coordinates of the location, using the Coordinate Type specified above. Up to 80 printable characters. Note that Coordinates do not relocate icons in geographic topology maps; dragging icons does.
Images	
Icon	Select an icon from the drop-down list to associate it with the location. Available icons are: Building, Location.
Topology Image	Click the **Browse** button to open the *Select Location* window through which you can select a map and associate it with the location. Click the **Eraser** icon to clear the field. Click the **Preview** button to view the associated map. Depending on whether or not an image is assigned, the label changes from "No image assigned" to "Image assigned".
Details	
Postal Address	An optional field for entering the address of the location. A string of up to 80 characters.
Location Details	An optional field for entering a description of the location. A string of up to 80 characters.

3 Click **Apply**.

2.2.3 Coordinate Types

You can define locations using a variety of coordinate types, enabling accurate definition of locations. The following are the default coordinate types:

Parameter	Description
Country-City	Country and city access codes. Example: 049-071
Latitude-Longitude	Latitude and longitude. Example: 38.57N, 121.47W
Area Code-Prefix	Area code and prefix. Example: 916-939
Vertical-Horizontal	Vertical / horizontal coordinates, developed by Bell Systems.

NOTE

Coordinates type and coordinates values are not used for displaying the location in geographic topology. They are available for informational purposes only.

2.2.4 Location Map

The Location Map viewer displays a topology view of network devices and their relationships. Clicking on the **Open Map** button opens the Location Map viewer for the selected location, displaying its sub-locations and the equipment associated with it. Associating a map with a location is optional; if no map is associated with the location, the Location Map viewer will be empty. Each location can either share a map with any other location or it can be associated with its own map.

LOCAL CRAFT NOTE

In the Local CRAFT Utility, the Map displays only the licensed equipment and their associated SUs (where applicable).

2.2.4.1 Defining Locations, Sub Locations and Maps

Primary (first level) locations have no parent locations. However, you can define sub-locations (second level) whose “parents” are the primary locations. You may continue and define third, fourth and fifth levels, where the parent location for level N is a location in level N-1.

For each location you can also define a Geographical Map.

To define locations, sub locations, and/or maps:

1 **Locations**: From the Location Manager, click **New** to open the Location Editor.

Sub Locations: Select a location and click **Add Child** to open the Location Editor with the selection location as the default parent location. Alternatively, click **New** to open the Location Editor and select an existing node as the parent in the Parent field.

2 Define the Location Name.

NOTE

For first level locations, the parent location field must be empty. For additional locations, a parent location must be defined.

3 If you want to associate the location with a map, select the required map in the Topology Image field.

NOTE

The required maps must be available (as *.jpg, *.gif, *.bmp, or *.png files) in the client station. The file size is limited to 512 kb.

4 You can optionally define the Location Type, Icon and other details available in the Location Editor.

5 You can associate equipment with locations. See Section 2.2.

2.2.4.2 Location Map Viewer Options

The Location Map viewer includes the following controls:

Parameter	Description
Up one level	Opens the next higher level of the topology map in the same window. Disabled with in first level locations.
Display BreezeMAX SU	Check to display the associated SUs on the map. Only SUs associated with the relevant location are displayed. If the serving Base Station(s)devices are associated with the same location, each of the displayed SU will be connected to the serving device.
Save	Saves the changes made to the map.
Cancel	Closes the Location Map viewer without saving.

The Location Map viewer provides a pop-up menu with the following options when right-clicking on an equipment/location icon:

Parameter	Description
Drill down	Opens the next lower level of the topology map in the same window. Available only when right-clicking a location in the map, provided there is a sub-location.
Configure	Available only for equipment with an Up state. Opens the Configuration window, enabling to configure the selected device. You can also double-click on the device icon on the map. Refer to the applicable *Device Manager Manual*.

Parameter	Description
Cut Through	Available only for equipment. Opens a Telnet session to the device. Applicable only for devices that support this feature. (SUs do not support Telnet.)
Open Alarms	Available only for equipment. Opens the Active Events window, enabling to view the alarms (if any) associated with the selected device.

The background color of the device icon on the map is in accordance with the alarm status of the device (the highest severity open alarms). For more information, refer to "Alarm Severities" - Section 3.3.1.2.

Place a cursor on an icon to view its general details.

2.3 Discovery Settings Manager

LOCAL CRAFT NOTE

Not applicable to the Local CRAFT Utility.

The Discovery Settings application enables to define the IP ranges/sub-nets in which devices are expected to be discovered, and global SNMP Read and Write community pairs. This defines the scope of your network and only devices within this scope will be discovered. Up to 65535 IPs are supported.

To open the Discovery Settings Manager Application:

Select *Managed Network* > *Discovery Settings Manager* from the main menu or the Navigation Pane.The *Discovery Settings Manager* displays the currently defined IP address ranges/sub-nets (up to 65535 IPs) and other applicable information and enables to add, edit, or remove a range.

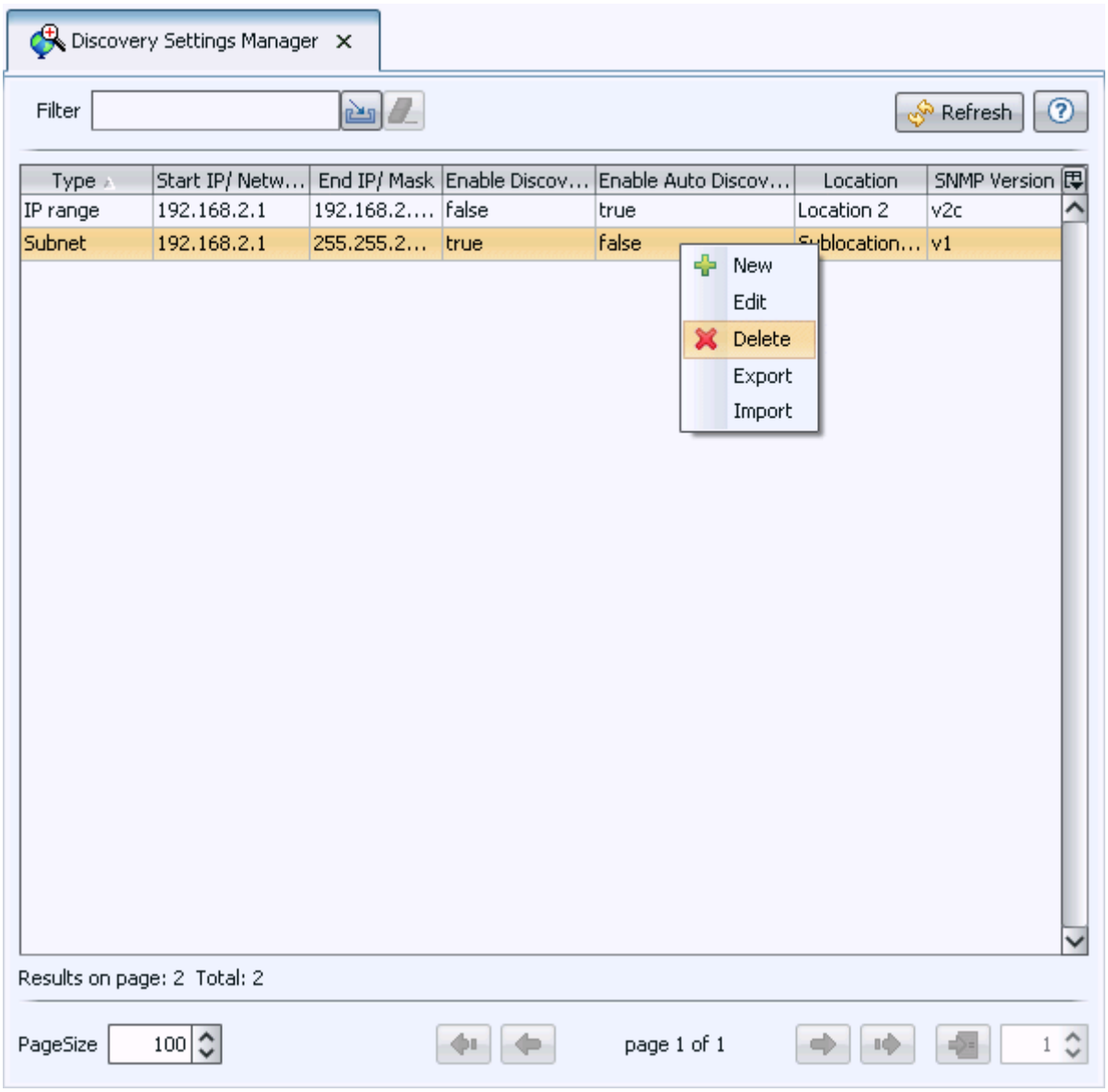


Figure 2-3: Discovery Settings Manager

Use the right click menu to perform the following available actions:

Button	Action
New	Click to add a new entry to the table. This is done via the "Network Settings Window". Up to 65535 IPs are supported.
Edit	Click to edit an entry from the table. This is done via the "Network Settings Window".
Delete	Click to delete the selected Network IP Address Range entry.

Button	Action
Import	Click to import an existing file (.xml or .nar) of IP address ranges settings. Browse to the location of the file and click **Open**.
Export	Click to export the current IP Address Ranges table to an external file (.xml). Browse to the location where the file is to be saved and click **Save**.

2.3.1 Network Settings Window

New or existing address ranges are edited inside the Network Settings window

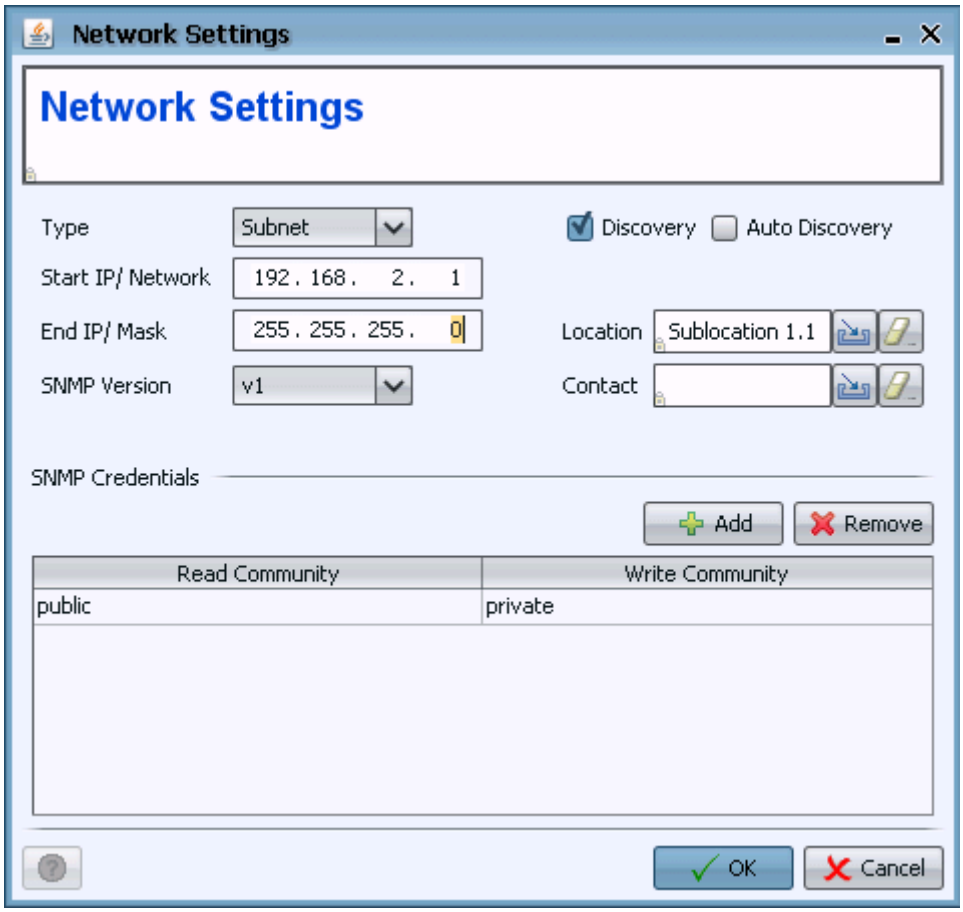


Figure 2-4: The Network Settings Window

The following information is displayed for each range:

Parameter	Description
Type	The type of range definition: IP Range or Subnet. Select from the drop-down menu whether to define the range using IP Range (the first and last address in the range) or Subnet (Network and Mask).
Start IP/Network	The first IP address in an IP Range or the Subnet address in a Subnet range type.
End IP/Mask	The last IP address in an IP Range or the Subnet Mask in a Subnet range type. To minimize unnecessary traffic load in the network, avoid defining IP address ranges that include too many “gaps”, e.g., non existing addresses.
Discovery	Check to enable periodical discovery, according to parameters defined in the Task Manager. When unchecked, discovery is disabled.
Auto Discovery	Indicates whether Auto Discovery for the range is enabled or disabled. When enabled, Discovery will be initiated whenever a trap is received from a device in the range.
Location	The location defined for devices in the range. If a location is not defined, the range will be used as the default location.
Contact	The contact defined for devices in the range.
SNMP Version	The SNMP protocol version used for communication by the discovered devices. This can be either: ■ v1 ■ v2c ■ v3 For a complete list of all compatible SNMP versions for each device see Appendix E.

Parameter	Description
SNMP Credentials	Use the Add and Remove buttons to populate the SNMP Credentials. The type of credentials differ, depending on the SNMP version. For SNMP v1 and v2c, fill in the read/write community table: ■ Read Community - SNMP Read community to be used by discovery when accessing devices in the range. If unique communities are not defined, the defined global Read communities will be used one after the other. ■ Write Community - The unique SNMP Write community to be used when accessing discovered devices in the range. If unique communities are not defined, the global Write community paired with the global Read community that was used to discover devices in the range will be used when accessing these devices. For SNMP v3, the following credentials apply: ■ Username - Username used for authentication ■ Security Level - Authentication and privacy settings » NoAuth_NoPriv - Both authentication and privacy are disabled » Auth_NoPriv - Authentication is enabled and privacy is disabled » Auth_Priv - Both authentication and privacy are enabled ■ Authentication Algorithm - Hashing algorithm applied to the authentication password » MD5 - Message-Digest algorithm 5 » SHA - Secure Hash Algorithm ■ Authentication Password - Password used for authentication ■ Privacy Algorithm - Encryption standard used for data transmission » AES - Uses the Advanced Encryption Standard » DES - Uses the Data Encryption Standard ■ Privacy Password - Encryption key used by the privacy algorithm

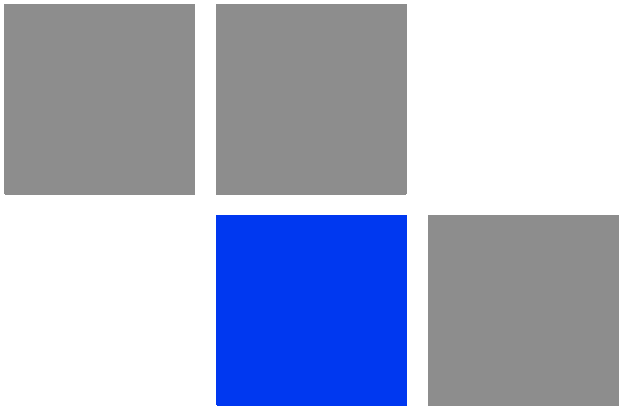
NOTE

Whenever possible, use unique SNMP community pairs for defined ranges rather than global community pairs.The key for deciding which Write community to use is the IP range. Unique community definitions enable to use the same Read community with several different Write communities in different ranges, as well as to use the same Write community with several different Read communities in different ranges. When using global community pairs, the Read community is the key for deciding which Write community to use, meaning that the Read community should not be used in more than one pair.

The Discovery process is based on the defined Read community. All future device management actions will use the defined Write community. If a wrong Write community was defined, the device will be discovered and displayed, but its status will be “Unknown” and it will not be possible to manage it. The same is true for cases where the Write community in the device was changed (not via the management system) after being discovered. In this case, the range must be updated with the correct Write community, the device(s) must be deleted from the database, and the Discovery process for the range should be re-initiated.

NOTE

When using global community pairs, the Read community is the key for deciding which Write community to use. Each Read community should not be used more than once.



Chapter 3

Fault Management

In This Chapter:

- "Introduction" on page 53
- "Active Events" on page 54
- "Event History" on page 57
- "Event Filter Manager" on page 74
- "Event Template Manager" on page 84
- "Script Command Manager" on page 97
- "Event Forwarding NBI Manager" on page 102 - not applicable to the Local CRAFT Utility

3.1 Introduction

The Fault Management module provides network operators with the full fault management capabilities required for rapid problem solving to ensure that the network is up and running.

The Fault Management module comprises efficient tools for managing alarms generated in the system. Information about each alarm is readily displayed, helping operators diagnose and correct system failures. The Fault Management tools allow you to acknowledge received alarms, clear, or forward them. You can apply filters to display specific alarms or to display specific information about each alarm according to your needs.

You can connect to other management systems and forward traps, apply templates to automate the processing of alarms, and trigger external scripts.

The following Fault Management tools are available:

- Active Events - Displays real time updates of new alarms entering the system, color coded according to severity and allows to manage each alarm.
- Event History - Enables to query the database for all events and alarms that occurred in the system in specific time intervals, color coded according to severity.
- Event Filter Manager - Allows to create, edit and delete filters which are used to display events in Active Events and Event History windows.
- Event Template Manager - Allows to create, edit and delete templates to automate the processing of alarms.
- Script Command Manager- Allows to associate template-matched alarms with external scripts.
- Event Forwarding NBI Manager - Provides an interface where you can connect to other management systems and effectively forward traps.

3.2 Active Events

The Active Events window displays real time updates of new alarms entering the system, color coded according to severity. It allows you to manage and diagnose alarms.

By default, only events that are categorized as alarms are displayed, and cleared alarms are removed from the Active Events display and can only be viewed from the Event History window. These can be either:

- Manually cleared alarms
- Alarms cleared by the automatic correlation rules
- Alarms associated to a device that can no longer be managed by the system
- Multiple occurrences of the same alarm (only one is visible in Active Events)

To change the default settings, see "Event Template Manager," Section 3.5.

To open Active Events:

Select *Fault Management* > *Active Events* from the main menu or from the Navigation Pane. The Active Events window is displayed.

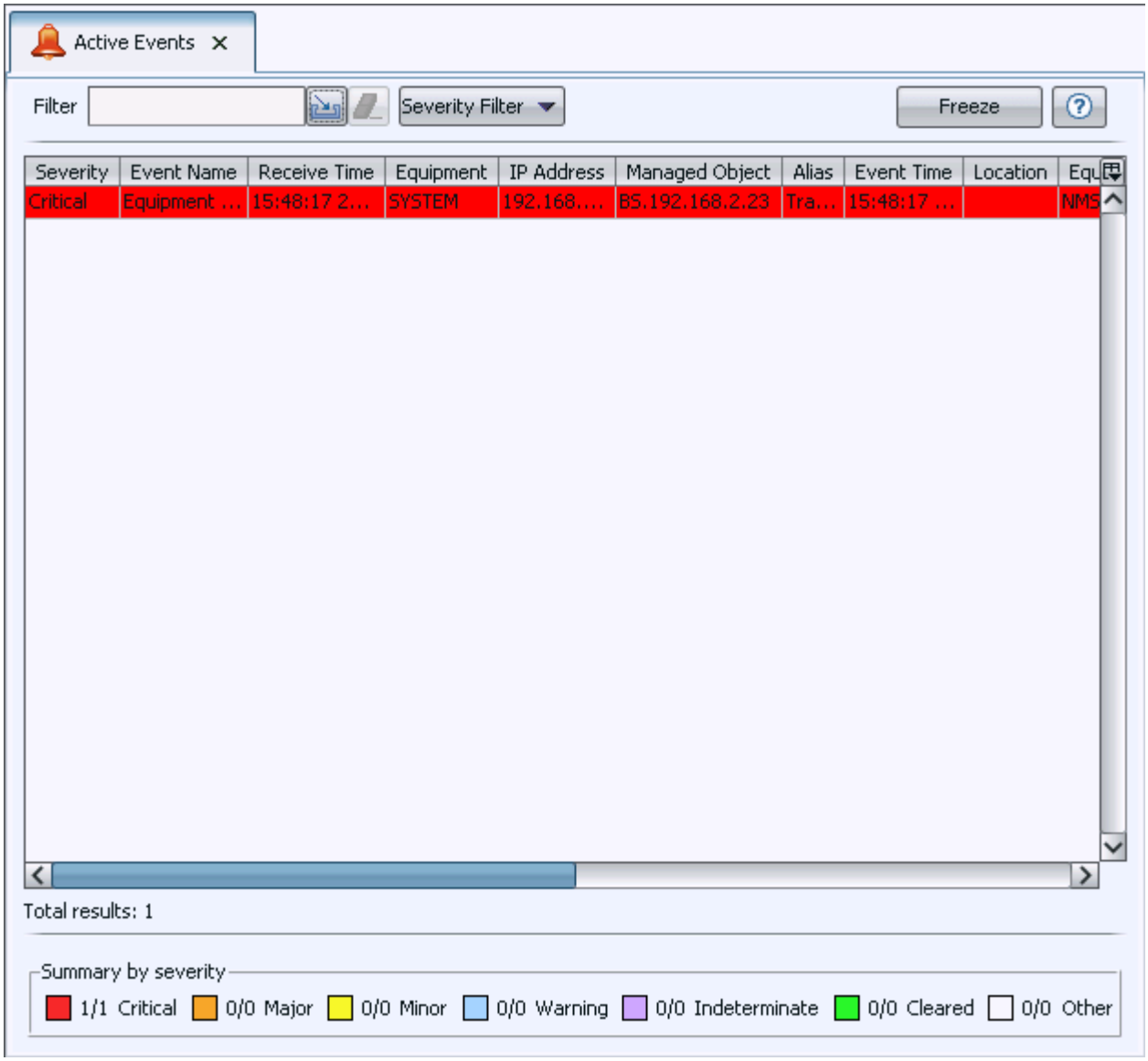


Figure 3-1: Active Events Window

When Active Events is launched, it opens in Listening mode. The display is updated whenever an alarm is received or cleared.

To freeze the display such that the display of incoming alarms is suppressed, click on the **Freeze** button. When in Freeze mode, the button label changes to Unfreeze, enabling to return to the default state of displaying incoming alarms on the fly.

The Active Events window is divided into the following main areas:

- *Filter* - allows you to filter out displayed alarms according to a custom filter or according to severity. The displayed alarms change according to your selection. Refer to Section 3.4 for information on the filtering options.

- *Alarm Table* - displays general information about each alarm (see Section 3.3.1.1). You can customize the information displayed in the table to provide a more efficient view.

- *Counters* - displays the distribution of the alarms, color coded according to their severity, and a count of the number of active alarms meeting the filter criteria out of the total number of active alarms. The format is x/y, where x is the number of active alarms meeting the filter criteria per severity and y is the total number of active alarms per severity.

Section 3.3.1 provides details on managing alarms in Active Events and Event History. The following information is available:

- "Alarm Table," Section 3.3.1.1

- "Alarm Severities," Section 3.3.1.2

- "Editing Event Filters," Section 3.4.2

- "Alarm Operations," Section 3.3.1.4

3.3 Event History

The Event History window displays a list of all events and alarms occurred in the system, color-coded according to severity.

To open the Event History:

Select *Fault Management* > *Event History* from the main menu or from the Navigation Pane. The Event History window is displayed:

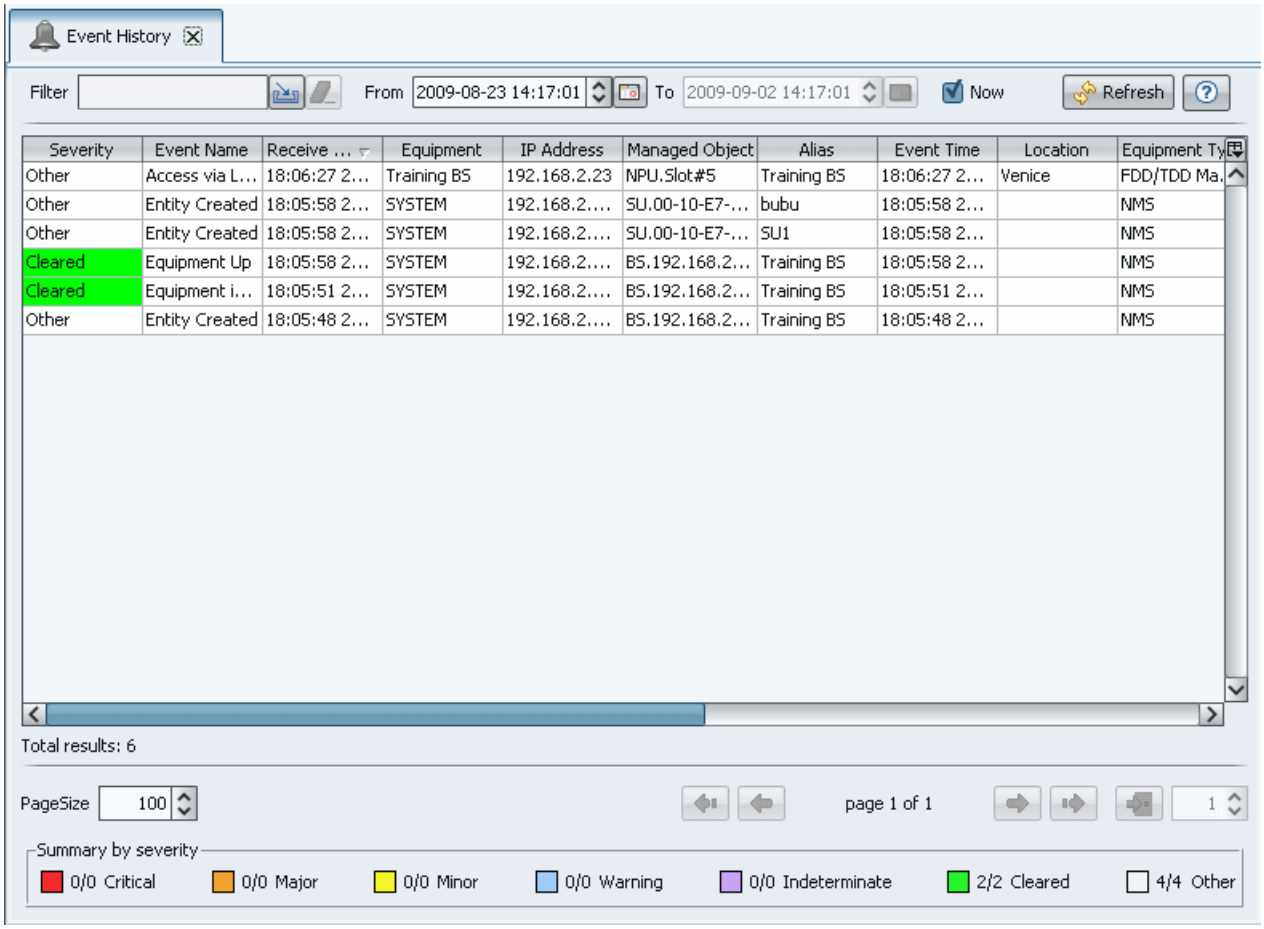

Event History
Filter
From 2009-08-23 14:17:01
To 2009-09-02 14:17:01
Now
Refresh
Severity | Event Name | Receive ... | Equipment | IP Address | Managed Object | Alias | Event Time | Location | Equipment Ty
Other | Access via L... | 18:06:27 2... | Training BS | 192.168.2.23 | NPU.Slot#5 | Training BS | 18:06:27 2... | Venice | FDD/TDD Ma.
Other | Entity Created | 18:05:58 2... | SYSTEM | 192.168.2.... | SU.00-10-E7-... | bubu | 18:05:58 2... | | NMS
Other | Entity Created | 18:05:58 2... | SYSTEM | 192.168.2.... | SU.00-10-E7-... | SU1 | 18:05:58 2... | | NMS
Cleared | Equipment Up | 18:05:58 2... | SYSTEM | 192.168.2.... | BS.192.168.2... | Training BS | 18:05:58 2... | | NMS
Cleared | Equipment i... | 18:05:51 2... | SYSTEM | 192.168.2.... | BS.192.168.2... | Training BS | 18:05:51 2... | | NMS
Other | Entity Created | 18:05:48 2... | SYSTEM | 192.168.2.... | BS.192.168.2... | Training BS | 18:05:48 2... | | NMS
Total results: 6
PageSize 100
page 1 of 1
Summary by severity
0/0 Critical
0/0 Major
0/0 Minor
0/0 Warning
0/0 Indeterminate
2/2 Cleared
4/4 Other

Figure 3-2: Event History Window

To display newly received alarms or to updated the display of cleared alarms, click on the **Refresh** button.

The Event History window is divided into the following main areas:

- *Counters* - displays the list of severities, color coded according to pre-defined settings, and a count of active alarms distributed according to severity. The format is x/y, where x is the number of active alarms meeting the filter criteria per severity and y is the total number of active alarms per severity.

- *Alarm Table* - displays general information about each event or alarm (see Section 3.3.1.1). You can customize the information displayed in the table to provide a more efficient view. You can also define the maximum number of alarms displayed in the table (see Section 3.3.1.1.1).

- *Filter* - allows you to filter out displayed alarms according to a custom filter or for a range of dates that the event occurred. By default the alarms are displayed for 10 days, but the range can be changed. Click on the calendar icon to change the date and use the up/down arrows to change the time from and until when to display events. The default time displayed is the real time of the system. If Now is checked, alarms will be displayed from the time selected until the present time.

- Page Size - allows you to limit the number of displayed alarms.

- *Page x of y* - a read only display of the number of the page displayed. You can browse through the multiple screen displays using the right/left arrows.

Section 3.3.1 provides details on managing alarms in Active Events and Event History. The following information is available:

- "Alarm Table," Section 3.3.1.1

- "Alarm Severities," Section 3.3.1.2

- "Event Details Window," Section 3.3.1.3

- "Alarm Operations," Section 3.3.1.4

3.3.1 Managing Alarms

The following paragraphs describe how to manage alarms using Active Events and Event History.

3.3.1.1 Alarm Table

The Alarms Table presents general information about each alarm occurred in the system. You can change the order of the columns by dragging the columns title to the desired location. The following describes the available attributes (columns) in alphabetic order.

Parameter	Description
Acked By	The user who acknowledged the alarm.
Ack Time	The date and time the alarm was acknowledged.
Alias	A user defined name for the equipment.
Cleared By	The user who cleared the alarm.
Clear Time	The date and time that the alarm was cleared.
Location	The location of the equipment at the source of the alarm.
Equipment	The name of the equipment at the source of the alarm.
Equipment Type	The type of equipment at the source of the alarm.
Event Category	The category classification of the event. The event categories are: Alarm, State Change, System Event, Config Change
Event Name	The name of the alarm. For SNMP traps, the name is the trap OID. If the name is blank when received by the application, the alarm takes the name of the event template used for processing.
Event Time	The time and date the event occurred.
Event Type	The classification type of the alarm. Event types vary according to the event category.
Last Update Time	The date and time the network element last updated the alarm.
Managed Object	The name of the equipment associated with the alarm. If the object name is unknown, NotFound appears. An identification of a component of the network element for which the alarm occurred. For example a port on a router would be a managed object instance.
IP Address	The IP address of the mediation agent reporting this alarm.
Receive Time	The time the alarm was received by a mediation agent.
Severity	The severity of the alarm. Refer to Section 3.3.1.2

Event Category	Event Type
Alarm	All
	Other
	Communications Alarm
	Quality of Service Alarm
	Processing Error Alarm
	Equipment Alarm
	Environmental Alarm
	Integrity Violation
	Operational Violation
	Physical Violation
	Security Violation
	Time Domain Violation
State Change	All
	State Or Status Change
System Event	All
	System Event
	Software Download
	Backup Configuration File
	Maintenance
	Telnet Session
Config Change	All
	Config Change
	Entity Added
	Entity Changed
	Entity Removed

3.3.1.1.1 Limiting the Number of Events from the Database

You can change the maximum number of events recorded in the database by changing the value of the *Max Row Count field* in the Database Aging Task Editor (Section 5.2.5). If the number of alarms exceeds 150% from the maximum number of alarms, older alarms will be deleted. If your Secondary Storage is set up as CSV, they will be saved to the following folder:

```
<Management_System>/filesystem/archive
```

3.3.1.1.2 Customizing Views in Active Events / Event History

You can make changes to a view by adjusting columns in the Alarm Table

The following are the available options for customizing the view:

- Sort columns - Click on the column header of the column according to which you want to sort the table. An icon appears on the header, indicating sorting in ascending/descending order. Only the following columns can be sorted: Severity, Event Name, Received Time, Equipment, IP Address, Managed Object, Alias, and Location.

NOTE

Column sorting is not available in Active Events.

- Move Columns - Click the column header of the column you want to move and drag it to its new location.

- Resize Columns - Click the right margin of the column header you want to resize and drag to resize the column. The column margin is located between the column headers.

You can also Configure which alarms will appear in the Alarm Table, using the Event Filter Manager (see Section 3.4).

3.3.1.2 Alarm Severities

The management system is delivered with a set of default alarm severity definitions, each with its own default color.

The default severity definitions are:

Parameter	Description
Critical	A service-halting condition occurs, requiring immediate corrective action. The equipment is completely out of service and you must restore its capability.
Major	A service-affecting condition has developed and corrective action is required. There is severe degradation in the equipment's capability and you must restore its full capability.
Minor	A non-service-affecting fault condition exists and corrective action should be taken in order to prevent a more serious fault. The detected alarm condition is not currently degrading the capacity of the equipment.

Parameter	Description
Warning	A potential or impending service-affecting fault could occur, and no significant effects have yet been felt. Action should be taken to further diagnose and correct the problem to prevent it from becoming a more serious service-affecting fault. The detected alarm condition does not currently pose a problem, but may degrade the capacity of the equipment if you do not take corrective action.
Cleared	The problem is corrected, and the correlated alarm is cleared from the Alarm Table.
Other	All other types of events/alarms.
Indeterminate	Indicates an alarm for which the perceived severity is uncertain, due to any cause.

3.3.1.3 Event Details Window

The Event Tables in Active Events/Event History provide a simplified display, summarizing each alarm. The Event Details window, however, presents all the information associated with a selected alarm.

To open the Event Detail Information window:

From the Active Events/Event History window, select an alarm from the table, right-click and select **Event Details** from the *Alarm* pop up menu, or double-click on the alarm.

An example of the Event Details window is displayed below:

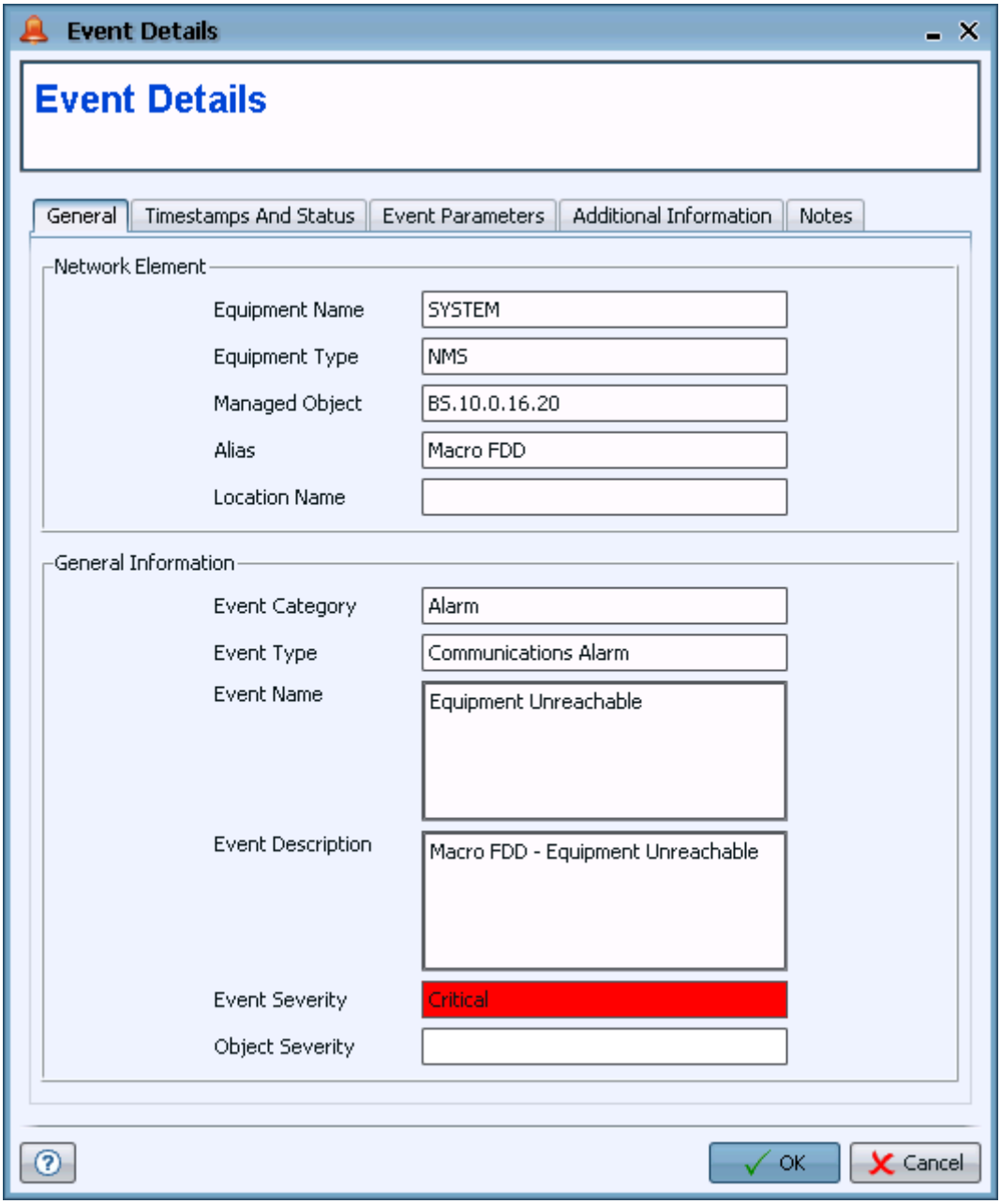


Figure 3-3: Event Details Window

The Event Details window consists of the following tabs:

- "General Tab," Section 3.3.1.3.1
- "Timestamps and Status Tab," Section 3.3.1.3.2
- "Event Parameters Tab," Section 3.3.1.3.3

- "Additional Information Tab," Section 3.3.1.3.4
- "Notes Tab," Section 3.3.1.3.5

3.3.1.3.1 General Tab

The General tab displays the following alarm attributes:

Parameter	Description
Network Element	
Equipment Name	The name of the equipment.
Equipment Type	The type of equipment: Base Station, Micro Base Station, SU, NPU, AU.
Managed Object	The name of the equipment associated with the alarm. If the object name is unknown, NotFound appears.
Alias	A user defined name for the equipment
Location Name	The physical location of the equipment.
General Information	
Event Category	The category classification of the event. The event categories are: Alarm, State Change, System Event, Config Change
Event Type	The classification type of the alarm. Event types vary according to the event category.
Event Name	The name of the alarm. For SNMP traps, the name is the trap OID. If the name is blank when received by the application, the alarm takes the name of the event template used for processing.
Event Description	An optional text description of the alarm as defined in the related event template.
Event Severity	The severity of the alarm.
Object Severity	The alarm severity of the object associated with the alarm.

3.3.1.3.2 Timestamps and Status Tab

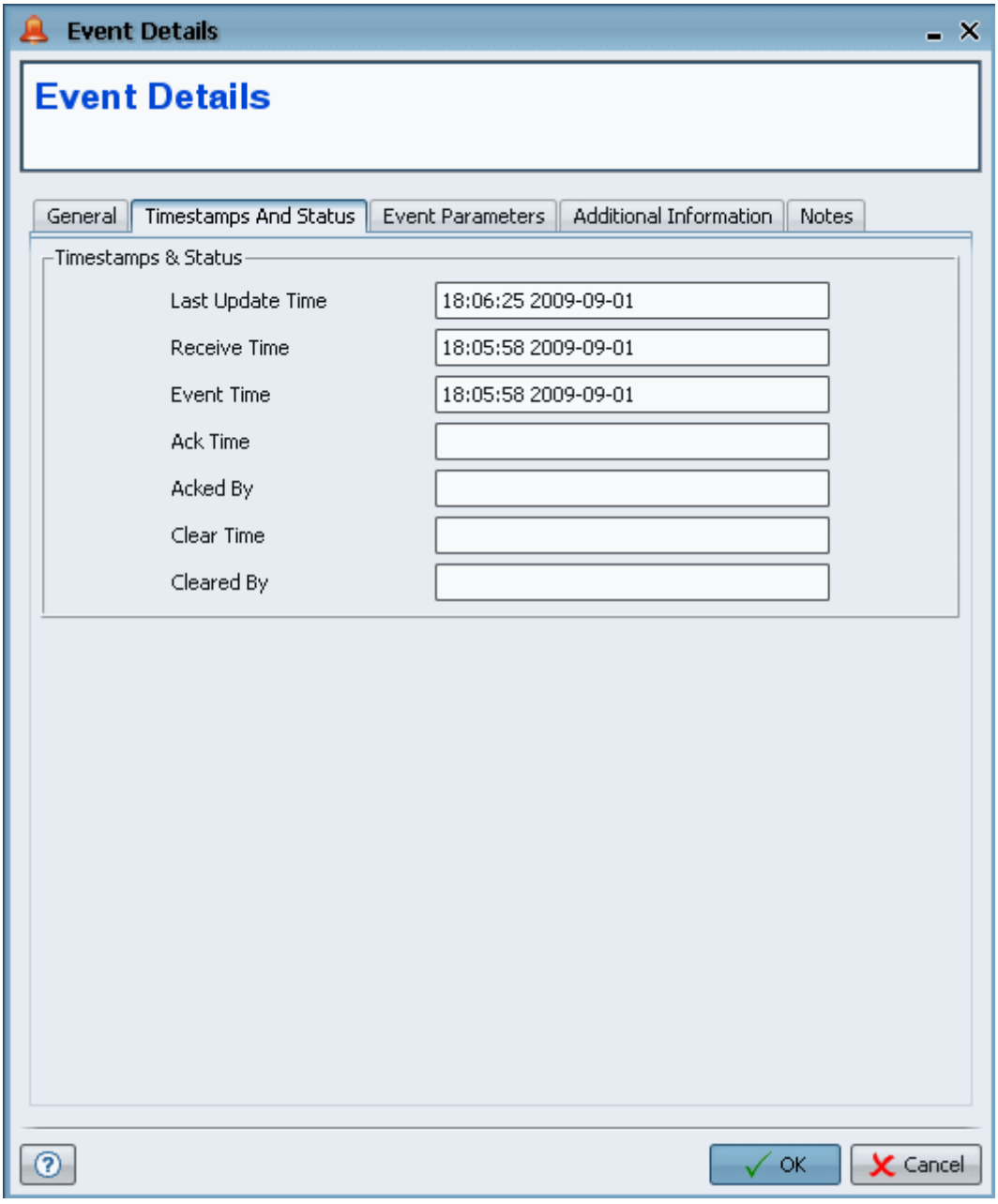


Figure 3-4: Event Details Window - Timestamps and Status Tab

The Timestamps and Status tab displays the following alarm attributes:

Parameter	Description
Last Update Time	The date and time the Alarm Table was last updated.

Parameter	Description
Receive Time	The time a mediation agent received the alarm.
Event Time	The time that the event actually occurred.
Ack Time	The date and time the alarm was acknowledged.
Acked By	The user who acknowledged the alarm.
Clear Time	The date and time that the alarm was cleared.
Cleared By	The user who cleared the alarm.

3.3.1.3.3 Event Parameters Tab

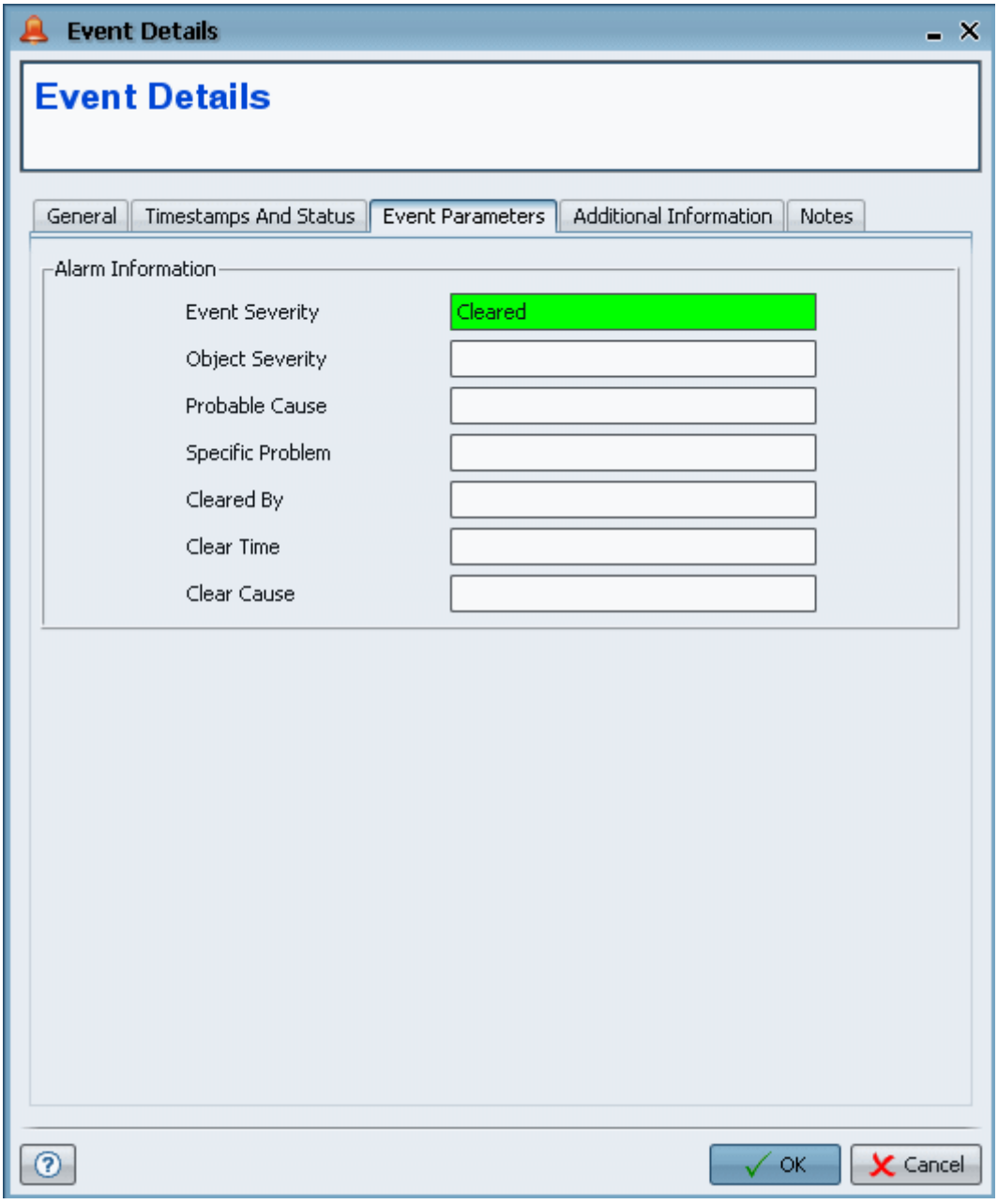


Figure 3-5: Event Details Window - Event Parameters Tab

The Event Parameters tab displays the following alarm attributes:

Parameter	Description
Event Severity	The severity of the alarm.

Parameter	Description
Object Severity	The alarm severity of the object associated with the alarm.
Probable Cause	The probable cause of the alarm.
Specific Problem	The specific problem that caused the alarm.
Cleared By	The user who cleared the alarm.
Clear Time	The date and time that the alarm was cleared.
Clear Cause	The reason the alarm was cleared.

3.3.1.3.4 Additional Information Tab

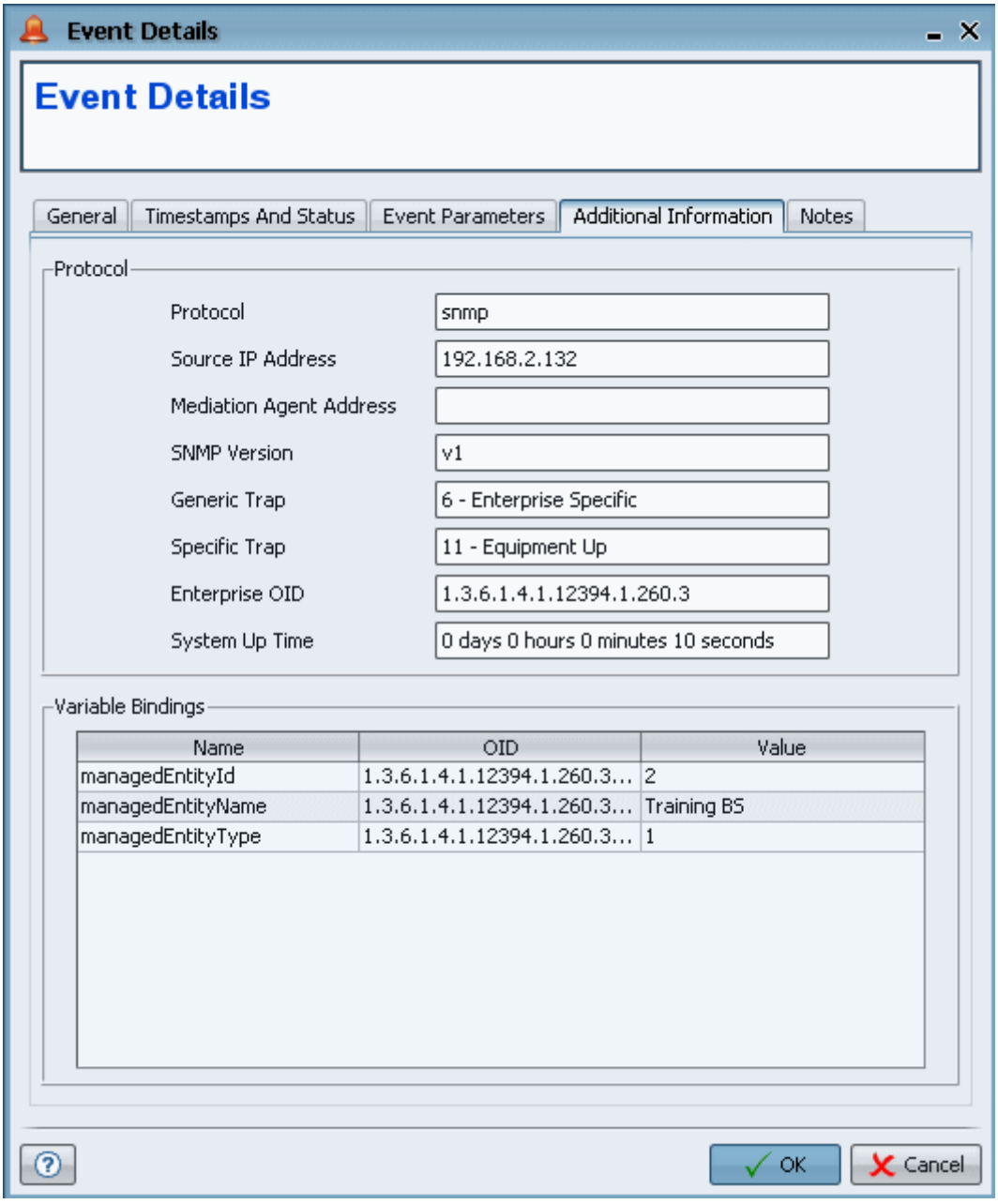


Figure 3-6: Event Details Window - Additional Information Tab

The Additional Information tab displays the following alarm attributes:

Parameter	Description
Protocol	

Parameter	Description
Protocol	The protocol used for the alarm. The current version supports SNMP only.
Source IP Address	The IP address of the object or device that sent the alarm. For Q3, the source is the TNS name of the device or object.
Mediation Agent Address	The IP address of the mediation agent that received the trap.
SNMP Version	The SNMP version number
Generic Trap	The generic trap code. For Q3, it indicates an enterprise specific trap. Possible values: 0,1,2,3,4,6
Specific Trap	The specific trap code as defined in the MIB, used only if Generic trap is 6.
Enterprise OID	The SNMP Object Identification number. For SNMP v1, the OID is the enterprise value from the SNMP PDU. For SNMP v2c, the OID is the SNMP trap OID. For Q3, the OID is the Q3 Alarm Enterprise OID—1.3.6.1.4.1.231.7.1.3.1.1.5.204.
System Up Time	Seconds elapsed since the object or device last rebooted. For Q3, it is seconds elapsed since the Q3 Listener/Parser last rebooted.
Variable Bindings - Displays a list of the variable bindings for the selected alarm	
Name	The name of the variable as it appears in the MIB.
OID	The variable's Object Identification.
Value	The value for the variable set in the MIB.

3.3.1.3.5 Notes Tab

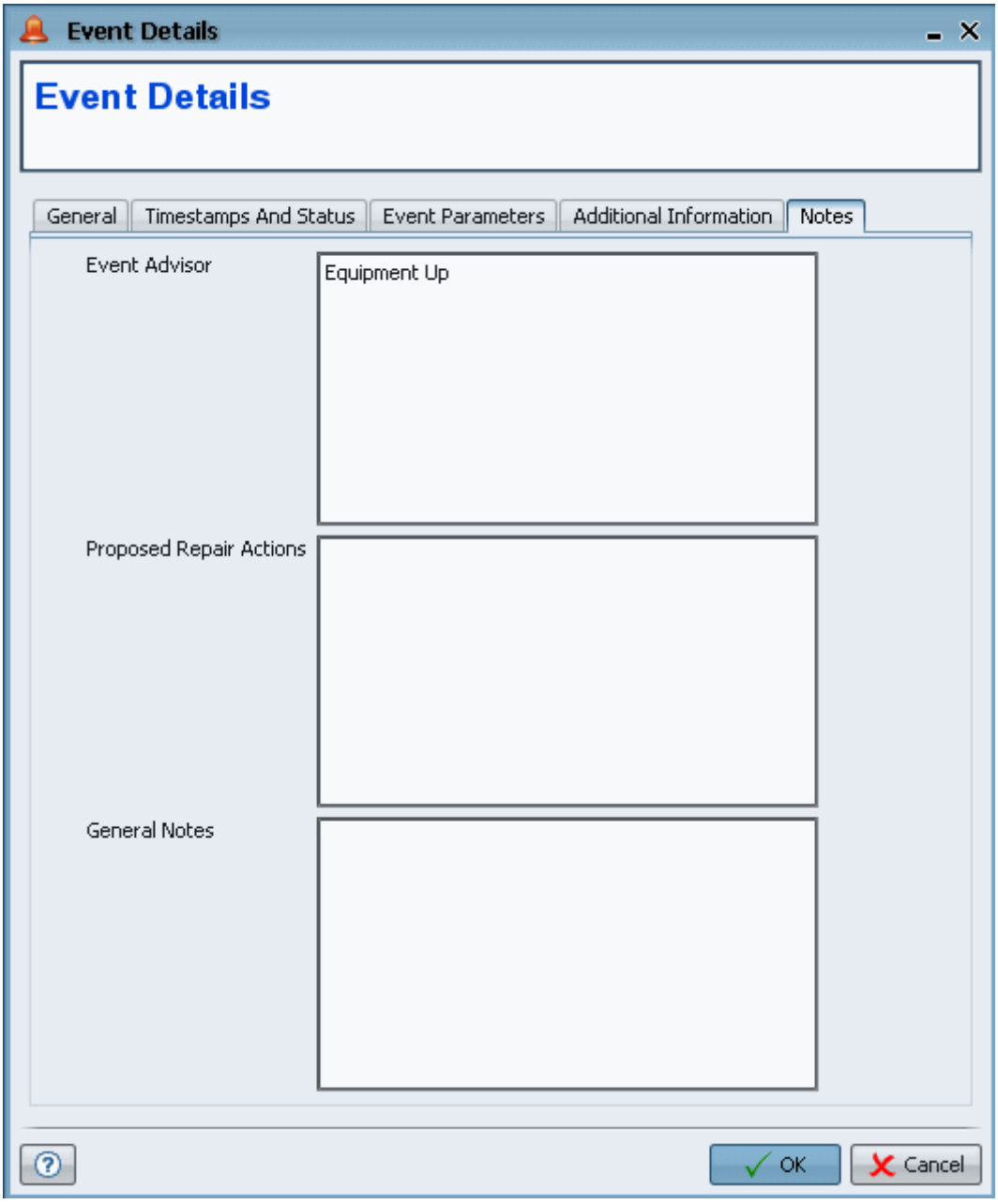


Figure 3-7: Event Details Window - Notes Tab

The Notes tab displays the following information about the alarm:

Parameter	Description
Event Advisor	Displays a text description of the alarm and sometimes proposes a remedy. For example, “The device has received an improperly authorized protocol message. The message has been discarded.” The default message displayed in the Advisor page comes from the trap’s MIB, but the message can be edited in the Event Template Editor Advisor page (see Section 3.5.1.3.1). The Advisor message is the default message for any e-mails sent about the alarm.
Proposed Repair Actions	The proposed remedy for the Alarm. The remedy comes from the trap’s MIB.
General Notes	Enables the operator to provide additional information about the selected alarm, such as steps already taken to correct the problem. The note is stored with the alarm.

3.3.1.4 Alarm Operations

The system provides many alarm management features allowing you to diagnose, troubleshoot, process, and clear alarms.

All general alarm operations are available via the context menu.

To manage alarms:

Select an alarm from the table and right-click on it to display the context menu.The following are the displayed items:

Action	Description
Acknowledge Alarm	Acknowledges the selected *open* alarm(s). The current date and time appear in the *Ack Time* field, and the name of the currently logged-on user appears in the *Ack By* field. Available for events that were set in the Event Template Manager to require acknowledgement and for alarms. This status can be changed, using an event template. See Section 3.5.1 for additional information.
Unacknowledge Alarm	Unacknowledges previously acknowledged selected alarm(s), and clears the entries in the *Ack By* and *Ack Time* fields. Available for the current user if the alarm was previously acknowledged by the current user.

Action	Description
Clear Alarm	Clears only *open* selected alarm(s). Alarms' status changes from *open* to *cleared*. The status of the alarm changes from *open* to *cleared*, but the alarm remains in the table. Available if the Event type of a selected entity is Alarm and is not acknowledged automatically by correlation mechanism.
Event Details	Displays detailed information about the selected alarm. See Section 3.3.1.3 for additional information.
Event Advisor	Displays a text description of the alarm and sometimes proposes a remedy.
Clearing Event	Opens the Event Details window of the event that cleared the alarm.
Equipment Details	Opens the Configuration Manager for the selected equipment.
Cut Through	Opens a Telnet session to the device. Applicable only for devices that support this feature.
Topology Map	Displays the Location Map centered on the equipment associated with the selected alarm. Available only when the device has a location associated with it.
Export	Exports the selected alarm(s) and creates a comma delimited text file that can be imported into other programs (for example, a spreadsheet).
Print Preview	Displays a preview of the Event History of the selected alarm(s) before printing.
Print	Prints the Event History of the selected alarm(s).

3.4 Event Filter Manager

The Event Filter Manager lets you create, edit and delete filters which are used to display events in the Active Events and Event History windows. When using pre-defined filters, specific alarm types are displayed, allowing you to control alarms more efficiently.

To open the Event Filter Manager:

1 Select *Fault Management* > *Event Filter Manager* from the main menu or from the Navigation Pane.

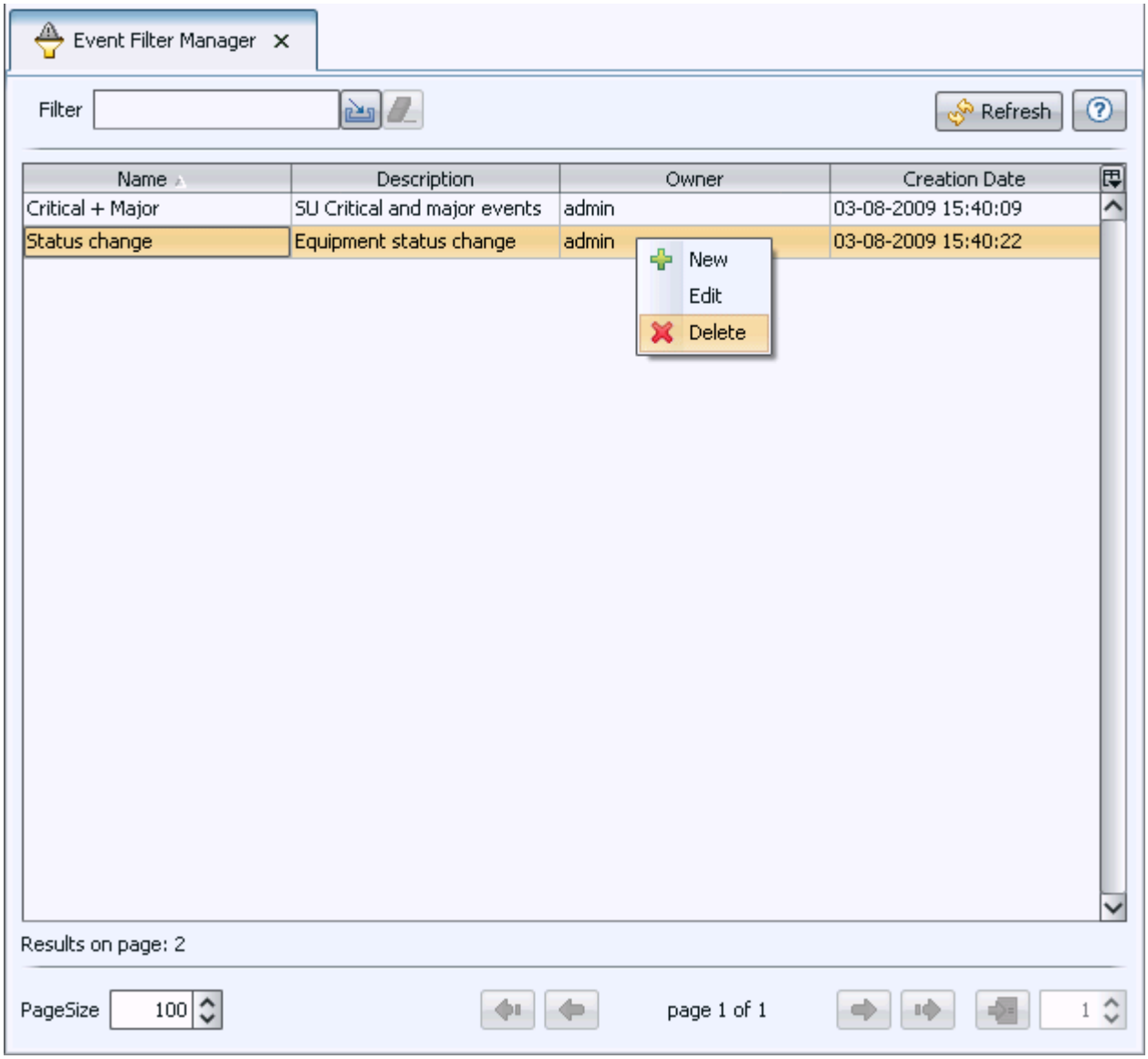


Figure 3-8: Event Filter Manager

NOTE

You cannot apply an event filter to the Alarm Tables in the Active Events or Event History windows from the Event Filter Manager. To apply a filter, select a Custom Filter in the Active Events or Event History windows.

For each filter, the following information is displayed:

Parameter	Description
Name	The name of the filter

Parameter	Description
Description	A description of the filter.
Owner	The user who created the filter.
Creation Date	The filter's date of creation.

2 From the Event Filter Manager you can:

- Create new event filters - see Section 3.4.1
- Modify existing event filters - see Section 3.4.2
- Delete event filters - see Section 3.4.3

3.4.1 Creating Event Filters

To create a new event filter:

1 From the Event Filter Manager window (Figure 3-8), right click and select **New** to define a new event filter. The Event Filter Editor window is displayed.

The Event Filter Editor window comprises the following main pages:

- "General Tab" on page 76
- "Simple Filter Tab" on page 78

2 Enter the relevant information in each of the pages.

3 Click **OK** to confirm your choices and save them to the database.

3.4.1.1 General Tab

In the General Tab, you can add general information on the filter.

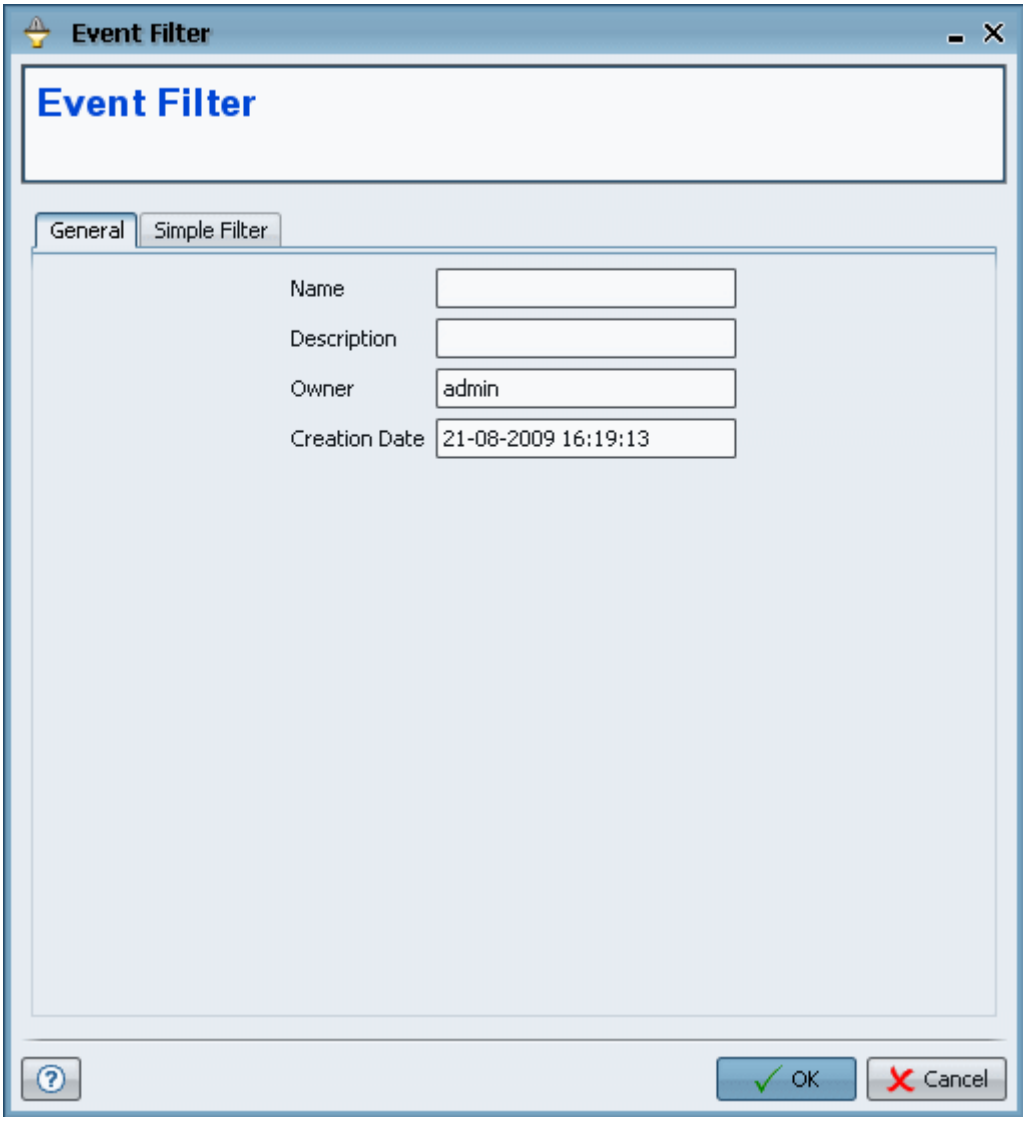


Figure 3-9: Event Filter Editor - General Page

The General Tab comprises the following fields:

Parameter	Description
General Event Template Settings	
Name	The name of the event filter.
Description	An optional description of the filter's purpose.
Owner	A read only display of the user who created the template.
Creation Date	A read only display of the creation date of the template.

3.4.1.2 Simple Filter Tab

The Simple Filter tab lets you enter custom filter criteria that are used to change the event views in Active Events and Event History windows to make the information more manageable.

To create filter criteria:

1 From the Event Filter Editor, click **Simple Filter** to define filter criteria. The Filter Page is displayed:

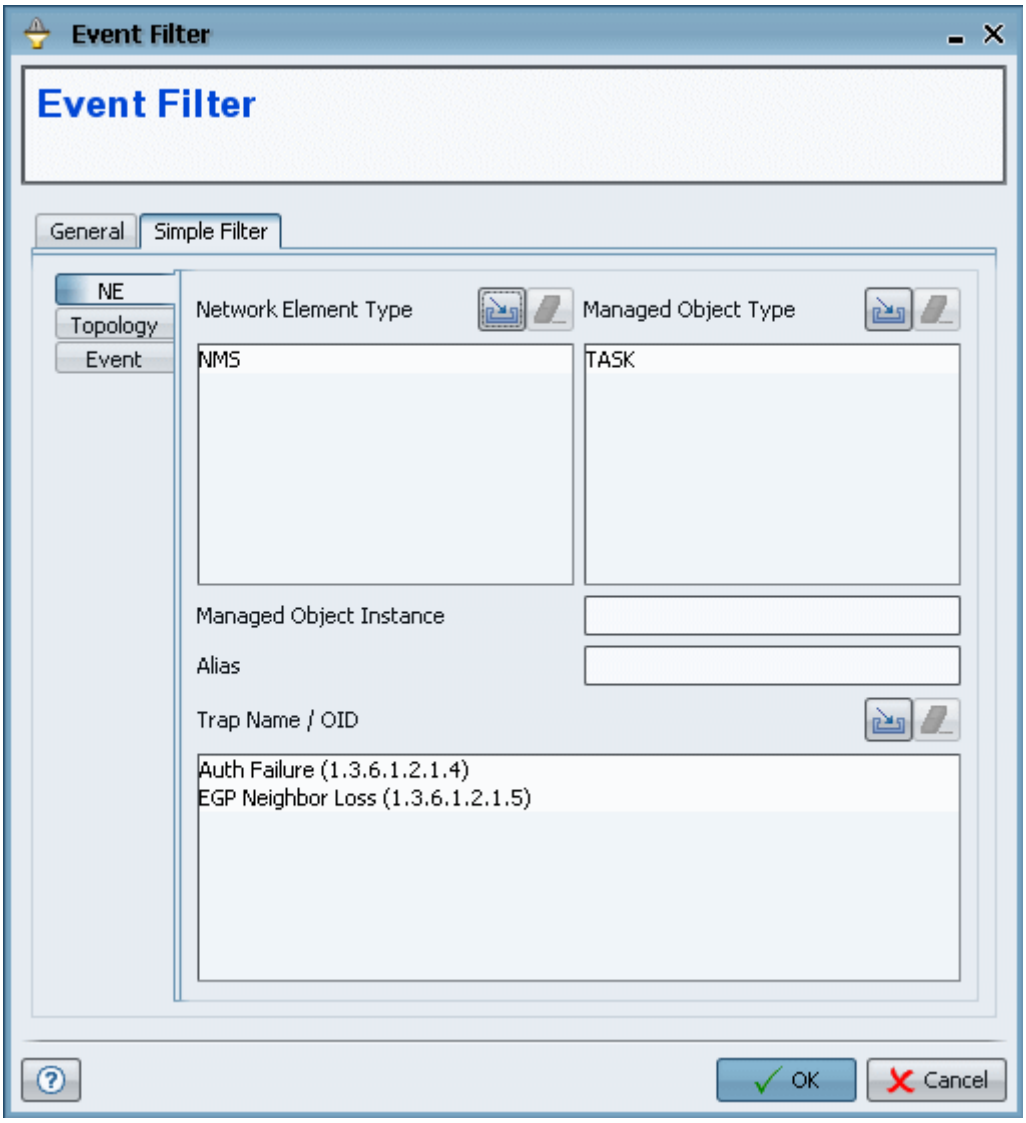


Figure 3-10: Event Filter Editor - Simple Filter Page: NE

The main Simple Filter page comprises the following pages:

- "NE Tab" on page 79
- "Topology Page" on page 79
- "Event Tab" on page 80

2 Enter the relevant information in each of the pages. When there is a select icon, click the icon to select elements from a list. Click the eraser icon to remove selected elements.

3 Click the **OK** button to confirm your choices and save them to the database

3.4.1.2.1 NE Tab

The NE page (Figure 3-10) lets you enter the following filter criteria:

Parameter	Description
Network Element Type	Select the type of the network element from which the alarm originated from.
Managed Object Type	Select the type of managed object from which the alarm originated.
Managed Object Instance	Enter a specific instance name of the object where the alarm originated.
Alias	A user defined name for the managed object.
Trap Name / OID	Select the trap name or OID Selector of the alarm. For SNMP traps, the name of the trap is OID.

3.4.1.2.2 Topology Page

The Topology Page lets you select the following filter criteria about the equipment and at a particular location:

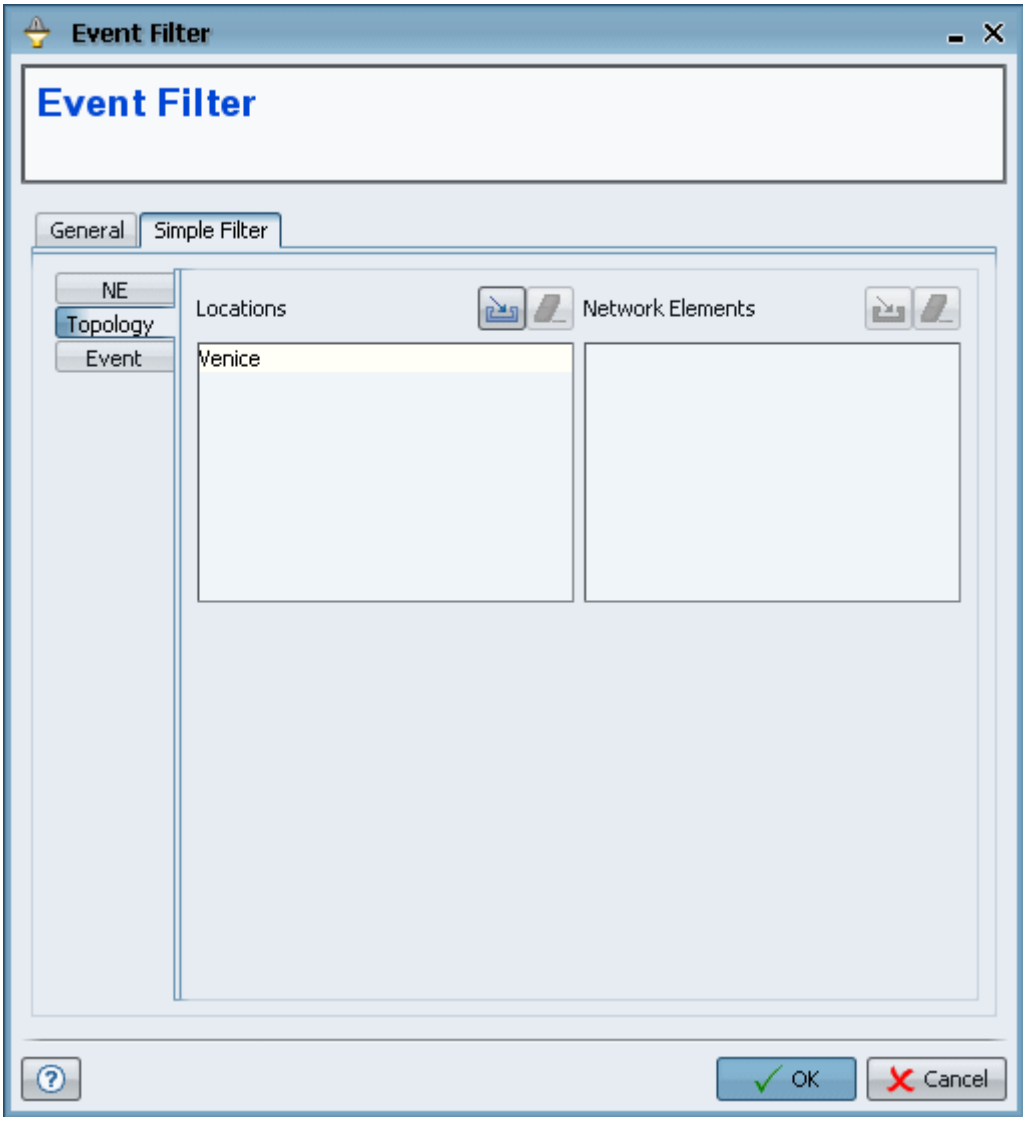


Figure 3-11: Event Filter Editor - Simple Filter Tab: Topology

Parameter	Description
Locations	Select the physical location of the equipment.
Network Elements	Select the network element from which the alarm originated. This option is available only if the user selected at least one Network Element Type which is different from "NMS" (in the NE page).

3.4.1.2.3 Event Tab

The Event page lets you select the following filter criteria:

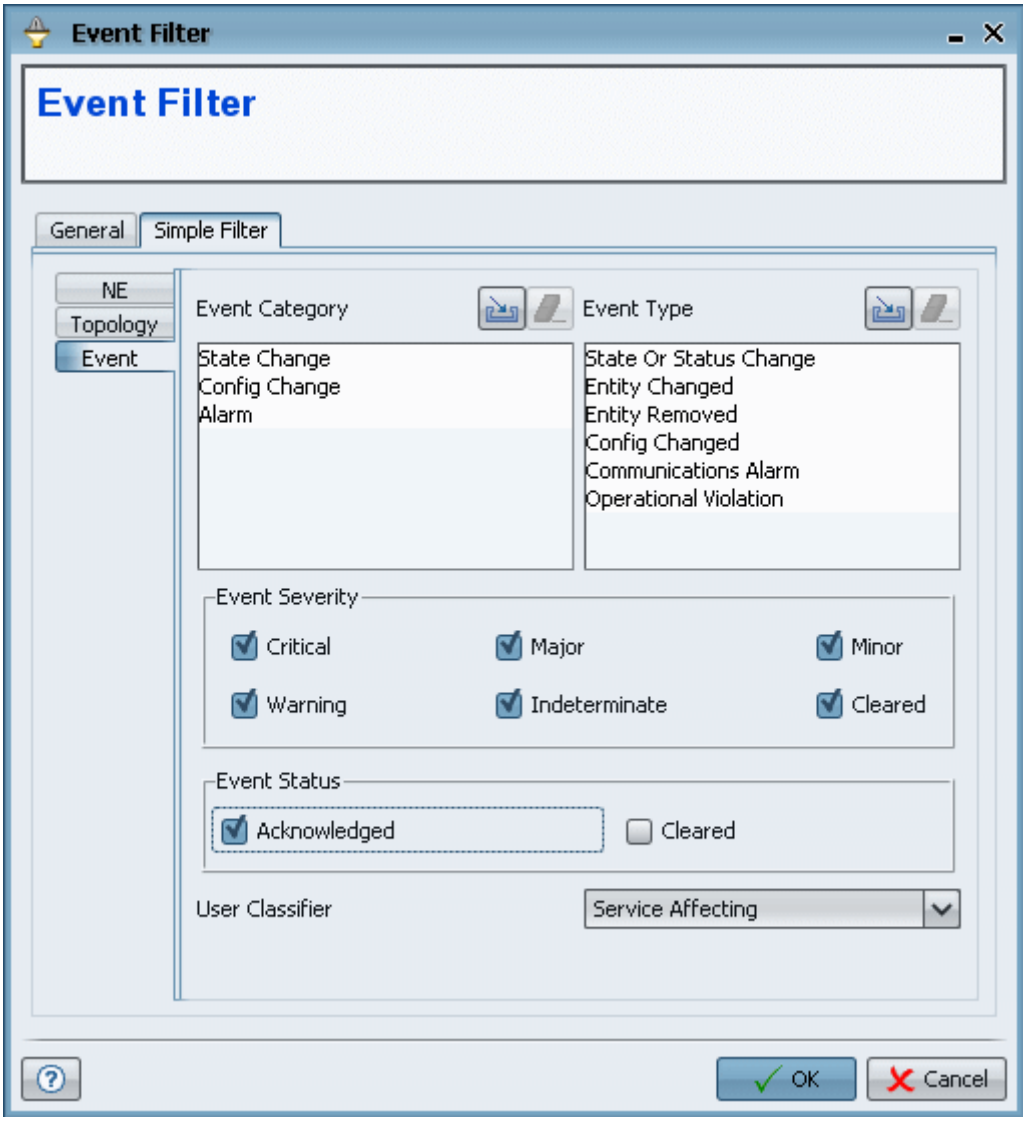


Figure 3-12: Event Filter Editor - Simple Filter Tab: Event

Parameter	Description
Event Category	Select the category classification of the event. Possible values are: All, Alarm, State Change, System Event, Config Change
Event Type	Select the classification type of the event. The possible values differ according to the event category.
Event Severity	Check the boxes for the relevant alarm severity. For more information on alarm severity see Section 3.3.1.2.
Event Status	Check *Acknowledged* to display only acknowledged alarms, *Cleared* to only display cleared alarms or both to display all alarms

Parameter	Description
User Classifier	Possible values are: None, Service Affecting

3.4.2 Editing Event Filters

To edit an existing event filter:

1 From the Event Filter Manager Window (Figure 3-8), right click an existing filter from the list and select **Edit**. The Event Filter Editor window is displayed:

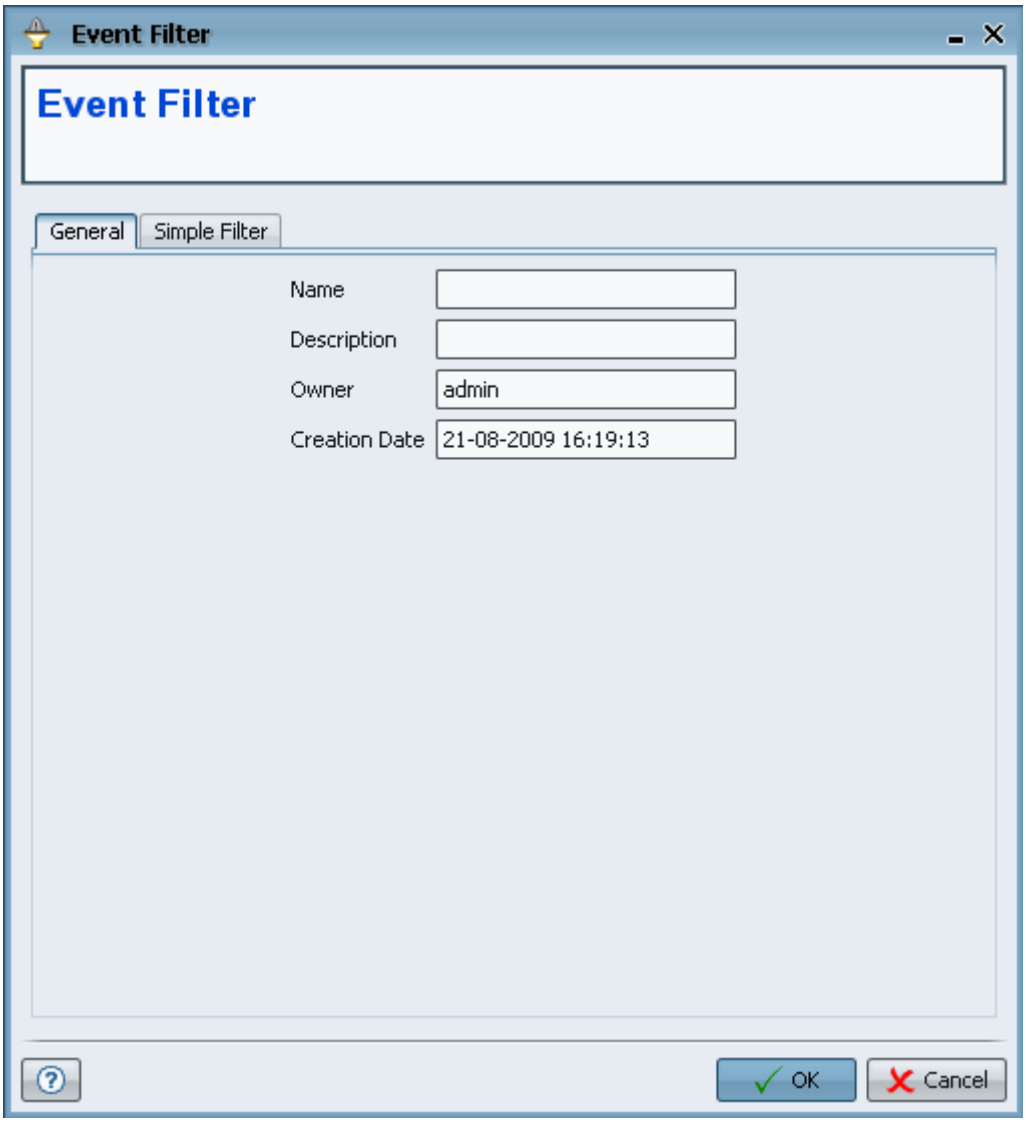


Figure 3-13: Event Filter Editor

The Editing Event Filter window comprises the following main pages:

» “General Tab” on page 76

» “Simple Filter Tab” on page 78

2 Edit the information in the fields on all the pages as required.

3 Click **OK** to confirm your choices and save them to the database.

3.4.3 Deleting Event Filters

To delete an Event Filter:

1 In the Event Filter Manager window (Figure 3-8), right click the filter to remove and select **Delete**. A confirmation message is displayed.

2 Click **Yes** to confirm the deletion.

3.4.4 Archiving Alarms

To ensure your database does not fill up with alarms, you can archive them via the Database Aging task. See Section 5.2.5 for further details.

3.5 Event Template Manager

Event Templates determine how the system processes different types of messages sent by managed network objects. These templates can even trigger external scripts (see Section 3.6). The system's messages (alarms) typically indicate a change in the operational status of the object, like a device failure or a system reset. Event templates match each incoming message with specific actions. Device drivers often install their own templates.

To open the Event Template Manager:

Select *Fault Management* > *Event Template Manager* from the main menu or from the Navigation Pane. The Event Template Manager window is displayed:

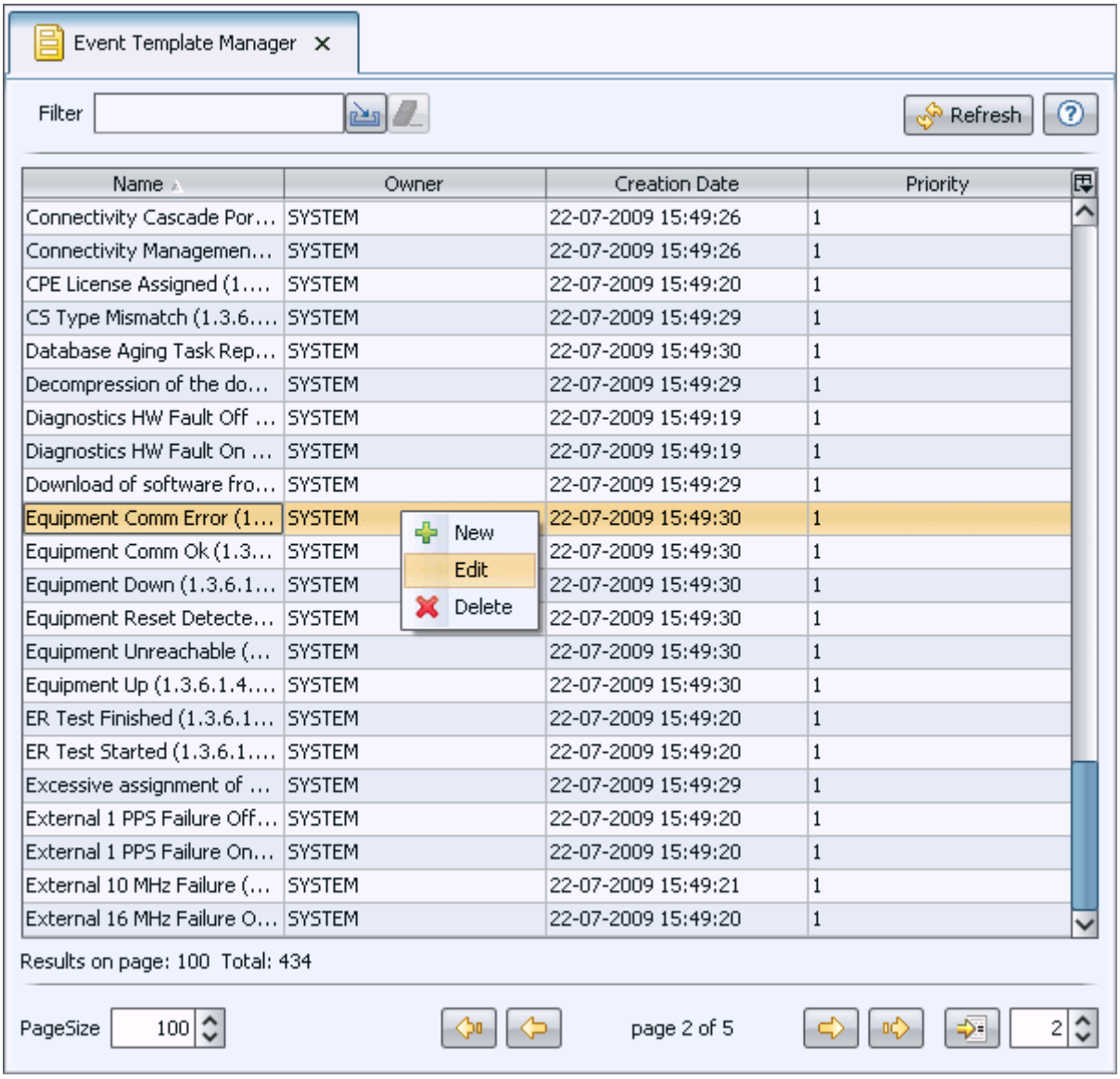

Event Template Manager
Filter
Refresh
Name
Owner
Creation Date
Priority
Connectivity Cascade Por... SYSTEM 22-07-2009 15:49:26 1
Connectivity Managemen... SYSTEM 22-07-2009 15:49:26 1
CPE License Assigned (1.... SYSTEM 22-07-2009 15:49:20 1
CS Type Mismatch (1.3.6.... SYSTEM 22-07-2009 15:49:29 1
Database Aging Task Rep... SYSTEM 22-07-2009 15:49:30 1
Decompression of the do... SYSTEM 22-07-2009 15:49:29 1
Diagnostics HW Fault Off ... SYSTEM 22-07-2009 15:49:19 1
Diagnostics HW Fault On ... SYSTEM 22-07-2009 15:49:19 1
Download of software fro... SYSTEM 22-07-2009 15:49:29 1
Equipment Comm Error (1... SYSTEM 22-07-2009 15:49:30 1
Equipment Comm Ok (1.3... SYSTEM 22-07-2009 15:49:30 1
Equipment Down (1.3.6.1... SYSTEM 22-07-2009 15:49:30 1
Equipment Reset Detecte... SYSTEM 22-07-2009 15:49:30 1
Equipment Unreachable (... SYSTEM 22-07-2009 15:49:30 1
Equipment Up (1.3.6.1.4.... SYSTEM 22-07-2009 15:49:30 1
ER Test Finished (1.3.6.1... SYSTEM 22-07-2009 15:49:20 1
ER Test Started (1.3.6.1.... SYSTEM 22-07-2009 15:49:20 1
Excessive assignment of ... SYSTEM 22-07-2009 15:49:29 1
External 1 PPS Failure Off... SYSTEM 22-07-2009 15:49:20 1
External 1 PPS Failure On... SYSTEM 22-07-2009 15:49:20 1
External 10 MHz Failure (... SYSTEM 22-07-2009 15:49:21 1
External 16 MHz Failure O... SYSTEM 22-07-2009 15:49:20 1
New
Edit
Delete
Results on page: 100 Total: 434
PageSize 100
page 2 of 5
2

Figure 3-14: Event Template Manager

For each template, the following information is displayed:

Parameter	Description
Name	The name of the template.
Description	A description of the template.
Owner	The user who created the template.
Creation Date	The template's date of creation.
Priority	The template's priority. The range is 1~99999.

From the Event Template Manager you can:

- Create new event templates and modify existing templates - Section 3.5.1
- Delete event templates - Section 3.5.2

3.5.1 Creating or Editing Event Templates

To create or edit an event template:

1. In the Event Template Manager window (Figure 3-14), right click and select **New** to define a new event template, or select an existing template from the list and click **Edit**. The Event Template Editor window is displayed:

   The Event Template Editor window comprises the following main pages:

   - "General Tab" on page 87
   - "Filter Tab" on page 88
   - "Behavior Tab" on page 93

2. Enter the relevant information in each of the pages.
3. Click **OK** to confirm your choices and save them to the database.

3.5.1.1 General Tab

In the General tab, you can add general information on the template.

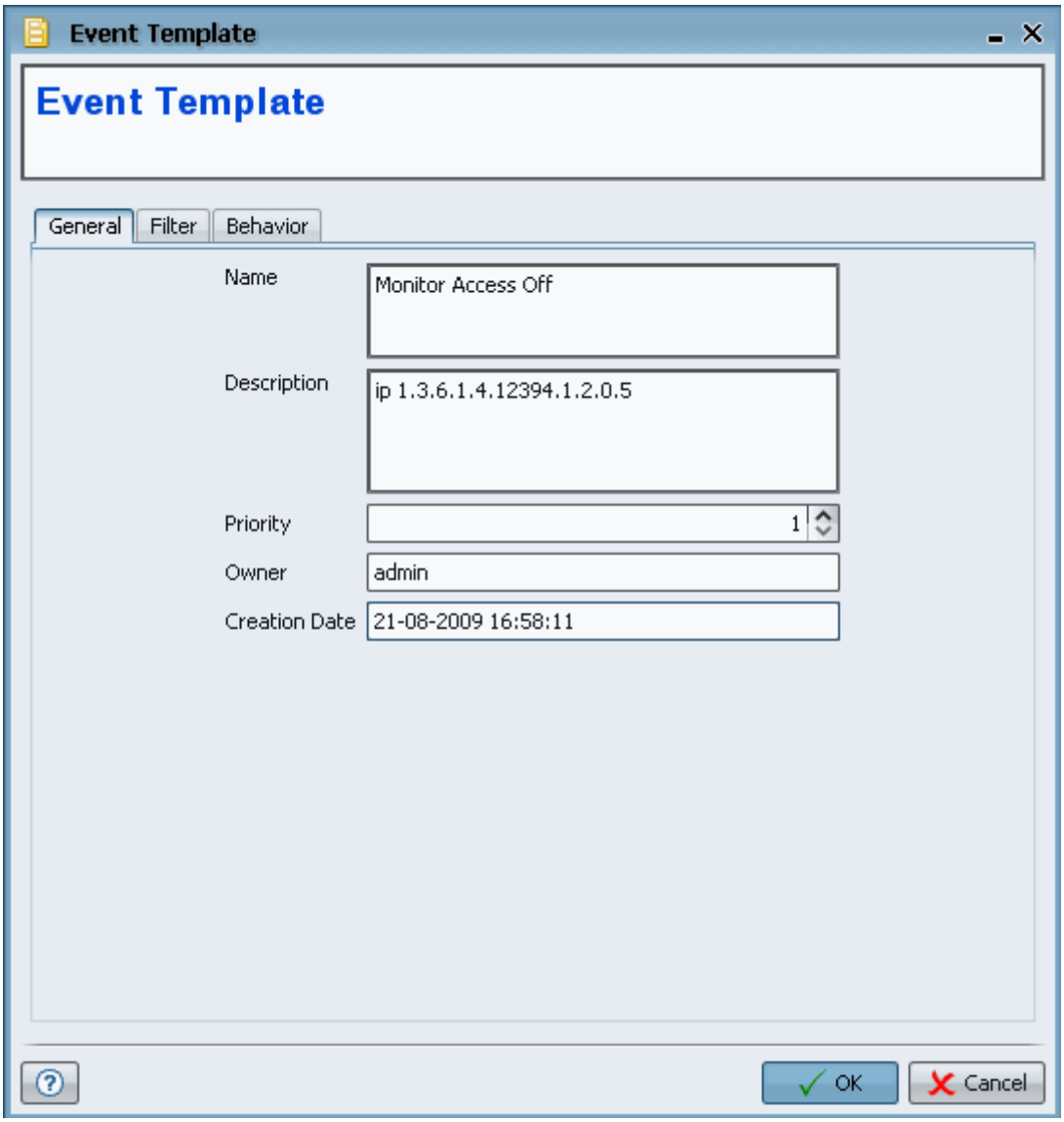


Figure 3-15: Event Template Editor - General Tab

The General tab comprises the following fields:

Parameter	Description
Name	The name of the event template.
Description	An optional description of the template's purpose.

Parameter	Description
Priority	A numerical ranking for this template. The template priority field determines which template processes an alarm if the alarm matches more than one template. The smaller the number defining a template's priority, the higher the priority the template is. The range is: 0~999999.
Owner	A read only display of the user who created the template.
Creation Date	A read only display of the creation date of the template.

3.5.1.2 Filter Tab

The Filter tab lets you edit Filter Criteria. This filter information matches, or finds, an event template for each alarm received by Fault Management. The first template that matches the received alarm controls the processing of that alarm.

Fault Management's fault processing logic uses the filtering information provided in the Event Template, along with the templates' priority, to determine which template to use for a given alarm.

NOTE

The smaller the number defining a template's priority, the higher the priority.

For every alarm received, Fault Management scans each template, in order of priority (high to low). Fault Management selects the first template that matches on each of the filterable fields for alarm processing.

If a template does not define a field (with either a null or empty value, or set to "All") then Fault Management does not use the field in the comparison. Empty or "All" in a filterable template field means that the field matches anything. Therefore, Fault Management uses only fields that have non-empty or non-"All" values in any comparison.

To create filter criteria:

1 From the Event Template Editor, click **Filter** to define filter criteria. The Filter tab is displayed:

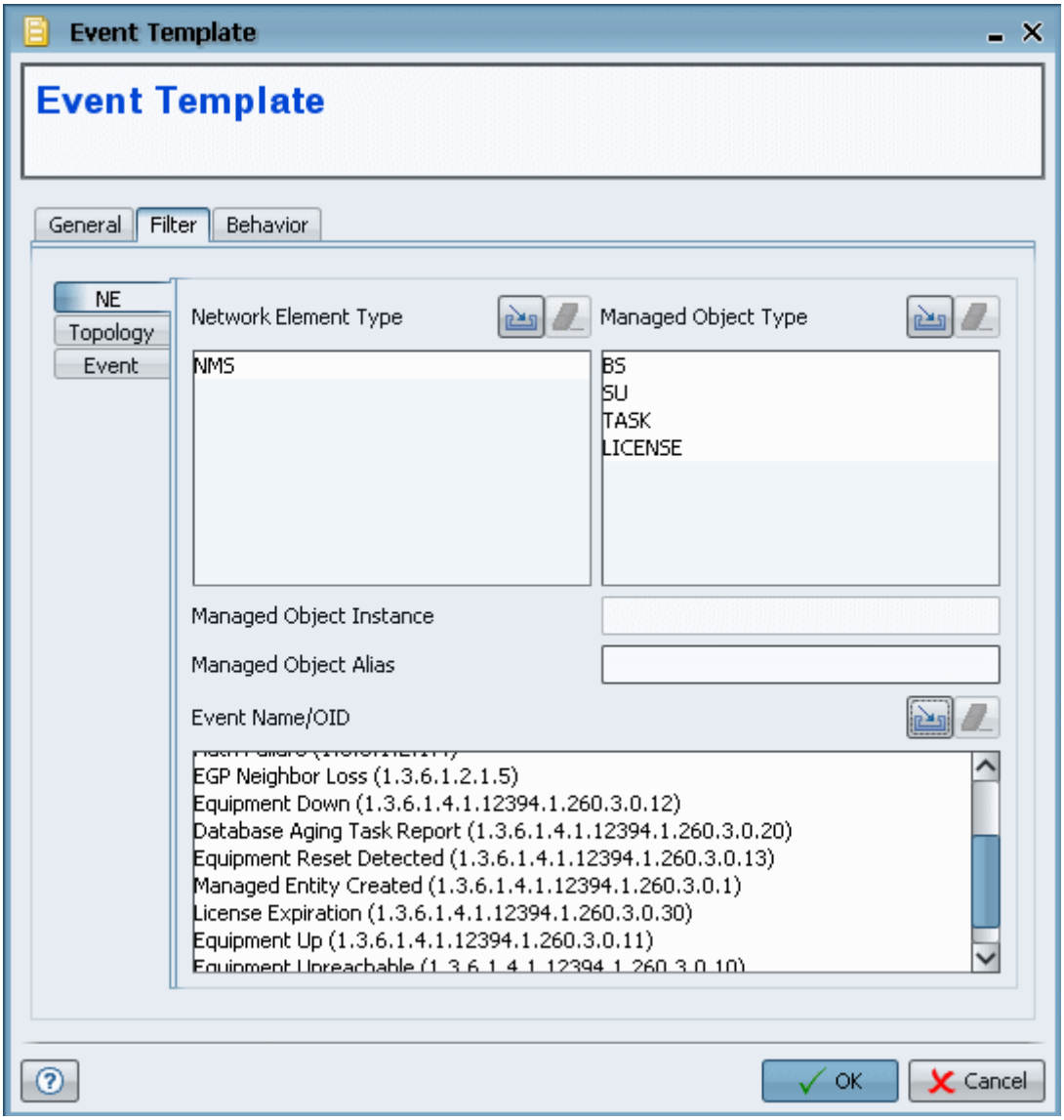


Figure 3-16: Event Template Editor - Filter Page: NE

The main Filter page comprises the following sub-tabs:

- "NE Page" on page 90
- "Topology Page" on page 90
- "Event Page" on page 91

2 Enter or edit the relevant information in each of the pages. When there is a select icon, click the icon to select elements from a list. Click the eraser icon to remove selected elements.

3 Edit the information in the fields on all the pages as required.

4 Click **OK** to confirm your choices and save them to the database.

3.5.1.2.1 NE Page

The NE page (Figure 3-16) lets you enter the following filter criteria about the network elements and managed objects from which the alarm originates:

Parameter	Description
Network Element Type	Select the type of the network element from which the alarm originates.
Managed Object Type	Select the type of managed object from which the alarm originates.
Managed Object Instance	Enter a specific instance name of the object where the alarm originated.
Managed Object Alias	A user defined name for the managed object
Event Name	Select the name of the alarm.

3.5.1.2.2 Topology Page

The Topology Page lets you select the following filter criteria about the equipment at a specific location:

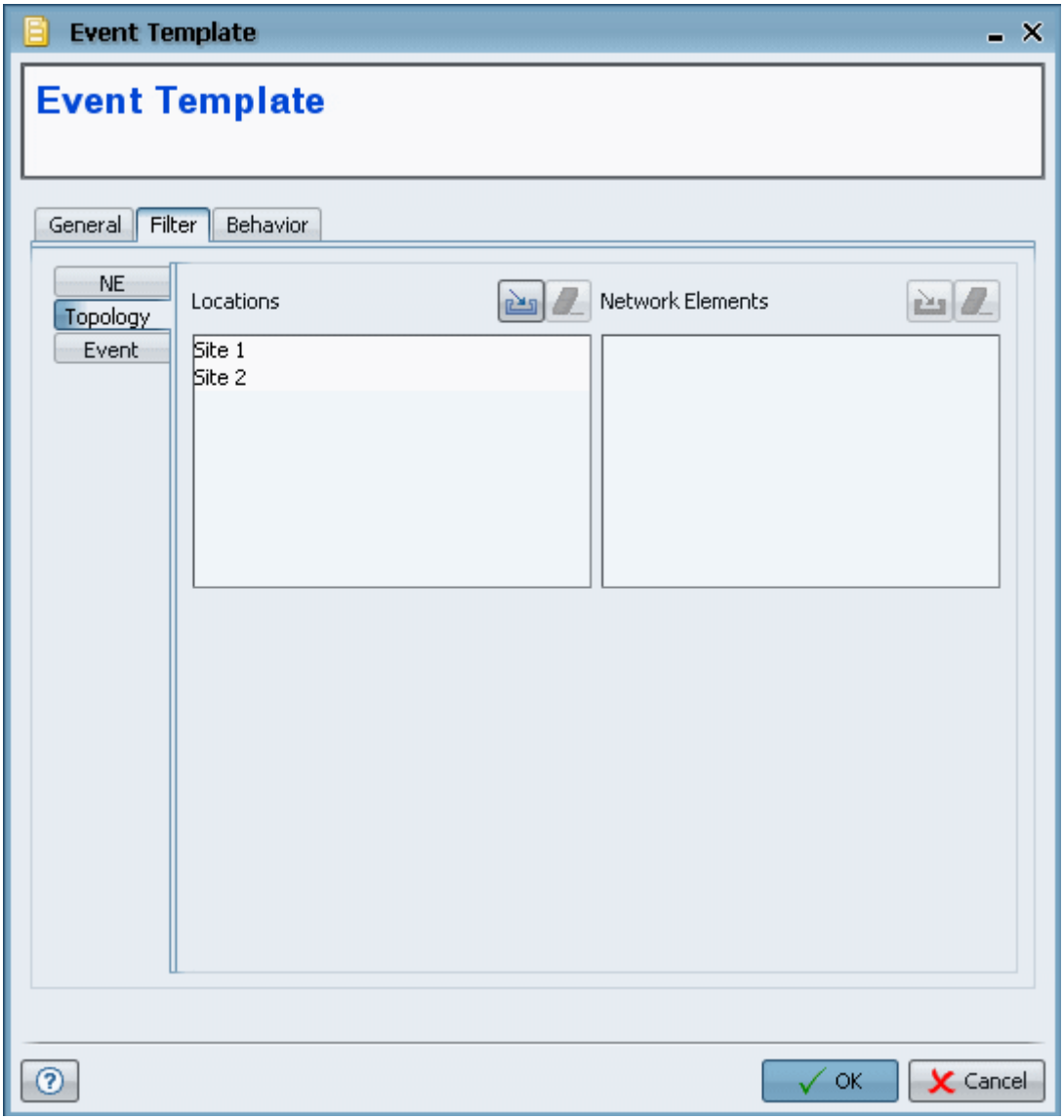


Figure 3-17: Event Template Editor - Filter Page: Topology

Parameter	Description
Locations	Select the physical location of the equipment.
Network Elements	Select the network element from which the alarm originates. This option is available only if the user selected at least one Network Element Type different from NMS (on the NE page).

3.5.1.2.3 Event Page

The Event page lets select the following filter criteria:

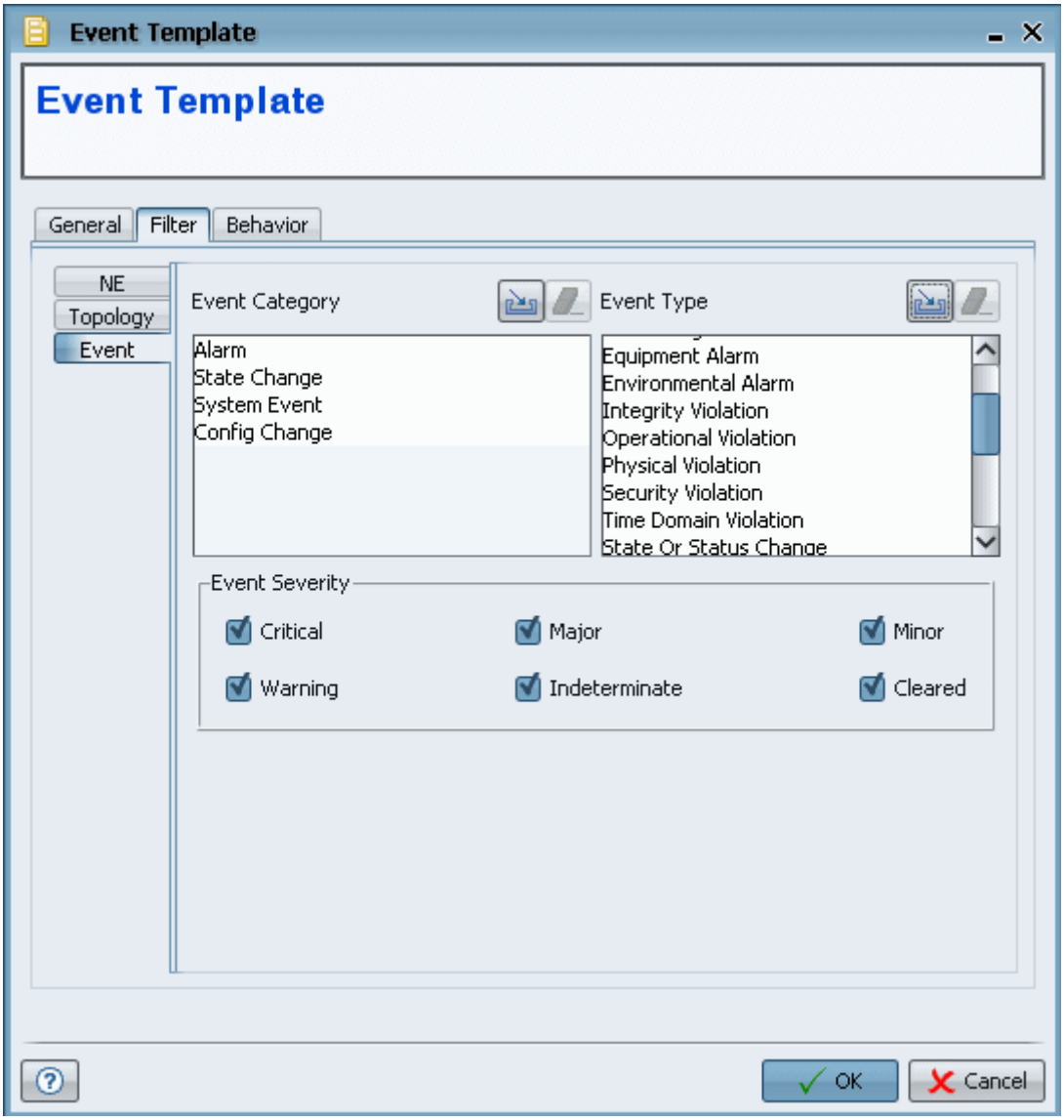


Figure 3-18: Event Template Editor - Filter Page: Event

Parameter	Description
Event Category	Select the category classification of the event. Possible values are: Alarm, State Change, System Event, Config Change
Event Type	Select the classification type of the event. The possible values differ according to the event category.
Event Severity	Check the boxes for the relevant alarm severity. For more information on alarm severity see Section 3.3.1.2.

3.5.1.3 Behavior Tab

The Behavior tab provides parameters that determine how Fault Management processes matching alarms.

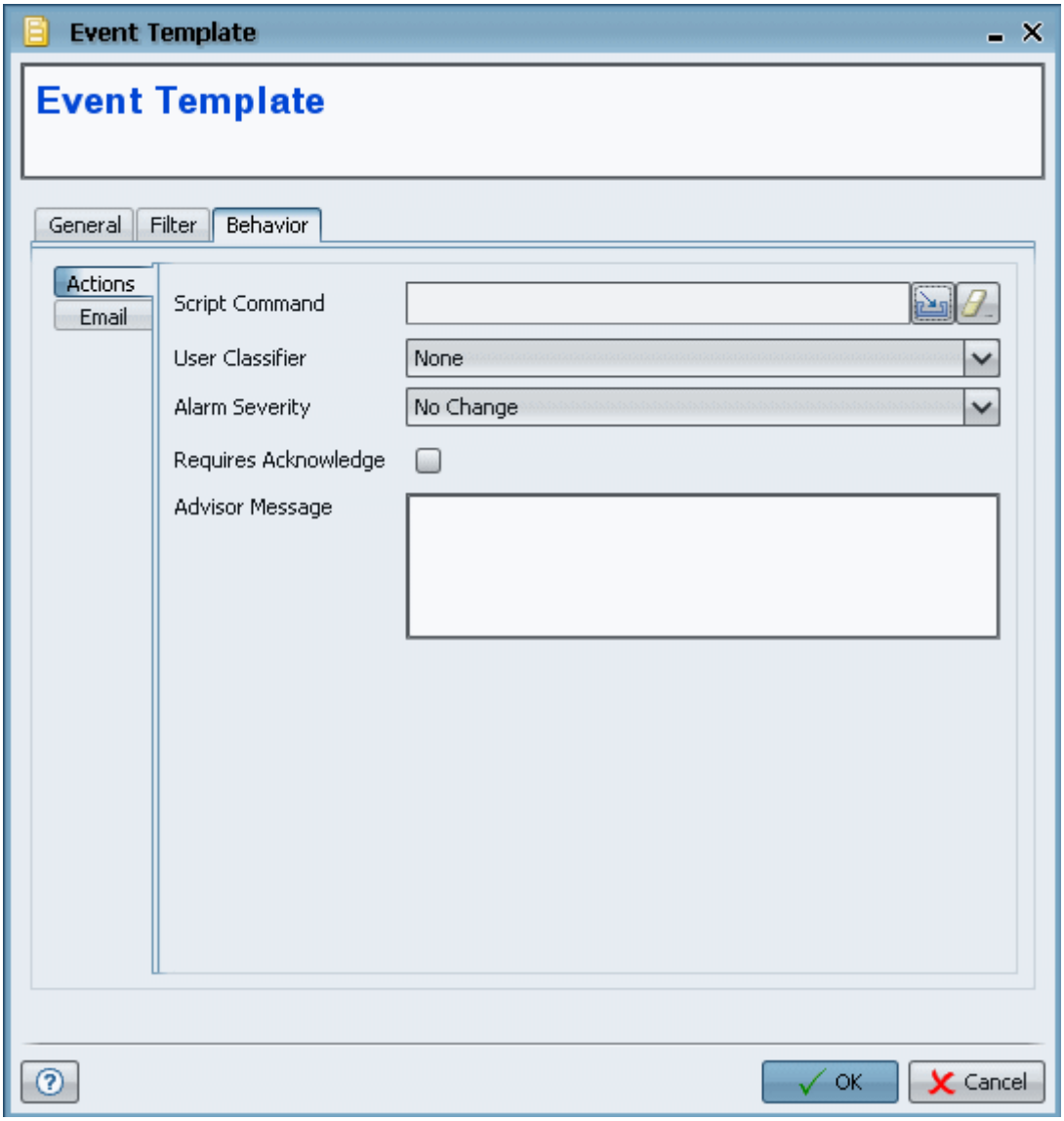


Figure 3-19: Event Template Editor - Behavior Tab

The main Behavior page comprises the following sub-tabs:

- "Actions Page" on page 94
- "Email Page" on page 94- not applicable to the Local CRAFT Utility

3.5.1.3.1 Actions Page

The Actions page contains the following parameters:

Parameter	Description
Script Command	Initiates an external script. Browse for the script command name by clicking the command (...) button. When you click this button, the Command Selector is displayed. See Section 3.6 for information about how to add commands to this selector. Click the eraser icon to remove selected scripts from this field.
User Classifier	Select the User Classifier. Possible values: None, Service Affecting
Alarm Severity	Select the severity level of the alarm. Once Fault Management selects the template, before actually processing the alarm, this field overrides the severity of the alarm as it was received from mediation. Possible values are: No Change, Cleared, Indeterminate, Warning, Minor, Major, Critical
Requires Acknowledge	Check to require that the associated event is acknowledged
Advisor Message	Enter a text description of the event.

3.5.1.3.2 Email Page

LOCAL CRAFT NOTE

Craft

The Email page is not applicable to the Local CRAFT Utility.

Use the Email page to enter a message that appears in emails when the template acts and define a list of recipients to be notified. This presupposes email functions within the environment where your host is installed.

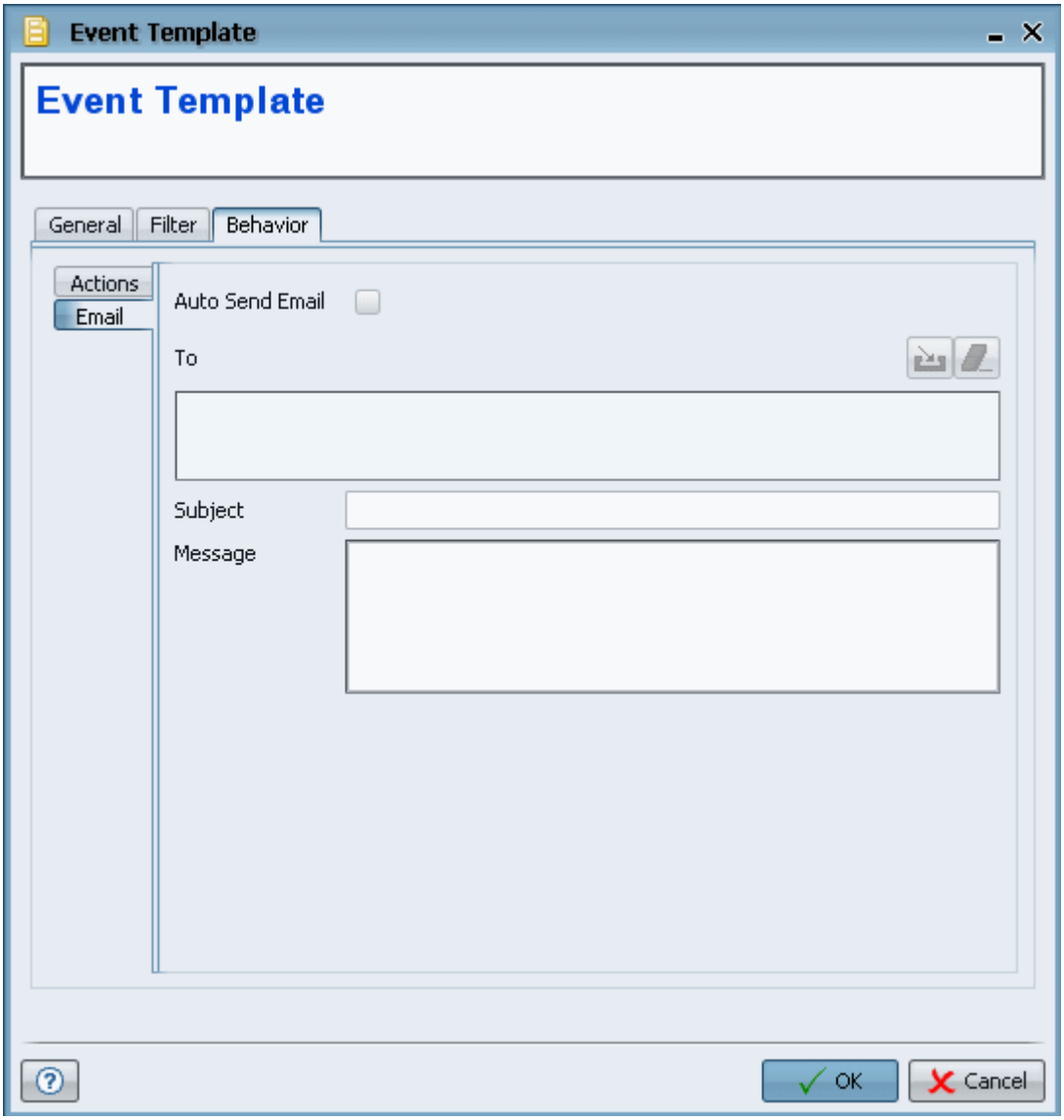


Figure 3-20: Event Template Editor - Email

The Email page contains the following parameters:

Parameter	Description
Auto Send Email	Check to automatically send a defined email message to the specified recipient(s) whenever the associated event occurs.
To	Select the recipient for this email message from the list.
Subject	Enter the subject line of the email message.
Message	Enter an email message.

3.5.2 Deleting Event Templates

To delete an Event Template:

1 In the Event Template Manager window (Figure 3-14), right click the template to remove and select **Delete**. A confirmation message is displayed.

2 Click **Yes** to confirm the deletion.

3.6 Script Command Manager

Template-matched alarms can trigger external scripts. These script commands can even have parameters that come from values in the *EventInfo* alarm's attributes, or other assigned constants. The Script Command Manager lists available script commands. You can create, edit and delete script commands.

To open the Script Command Manager:

Select *Fault Management* > *Script Command Manager* from the main menu or from the Navigation Pane. The Script Command Manager window is displayed:

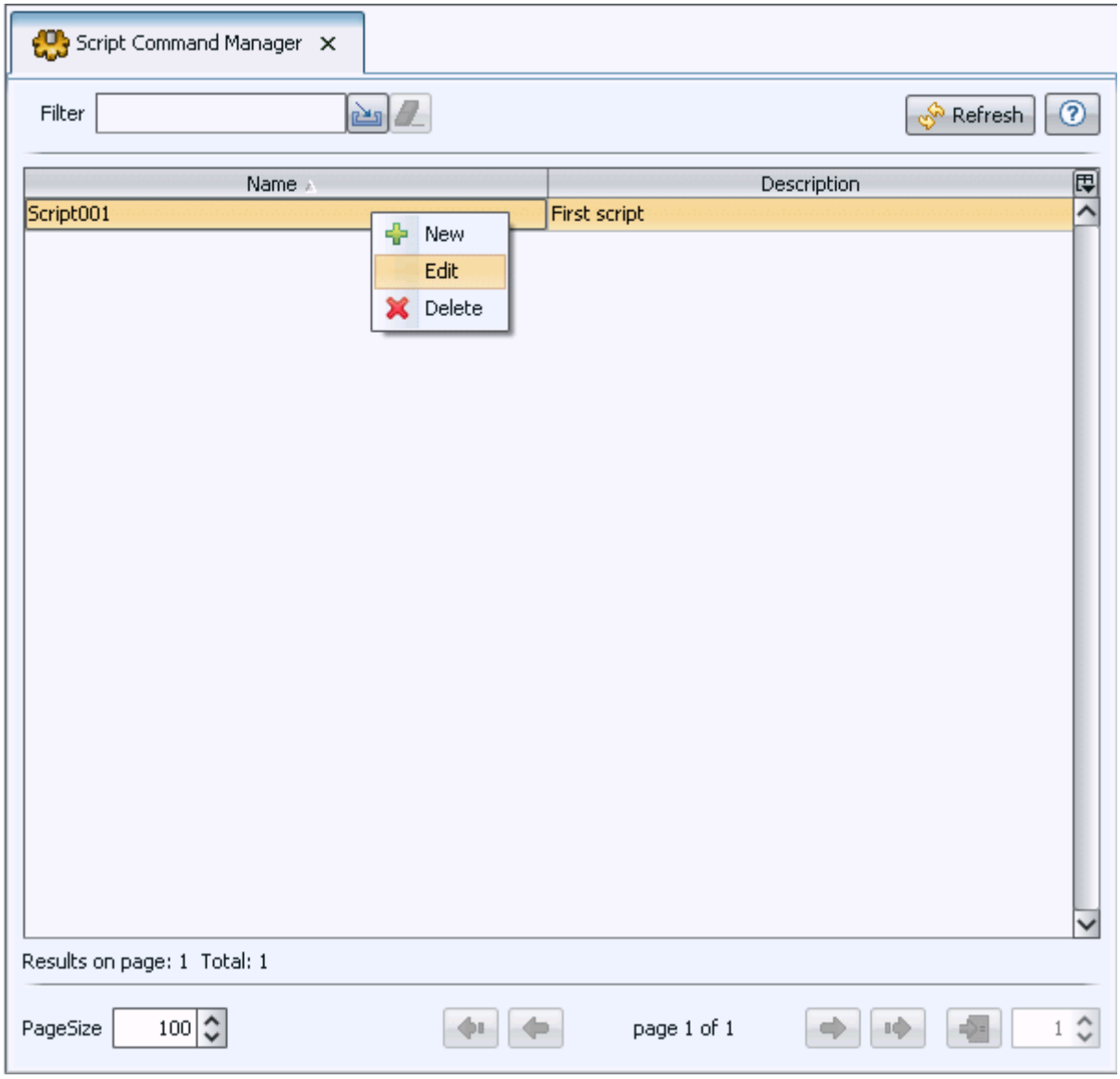


Figure 3-21: Script Command Manager

From the Script Command Manager, you can:

- Create new commands and modify existing commands - Section 3.6.1
- Delete commands - Section 3.6.2

3.6.1 Creating or Editing Commands

To create or edit a command:

1 In the Script Command Manager, right click and select **New** to define a new command. The Command Editor window is displayed:

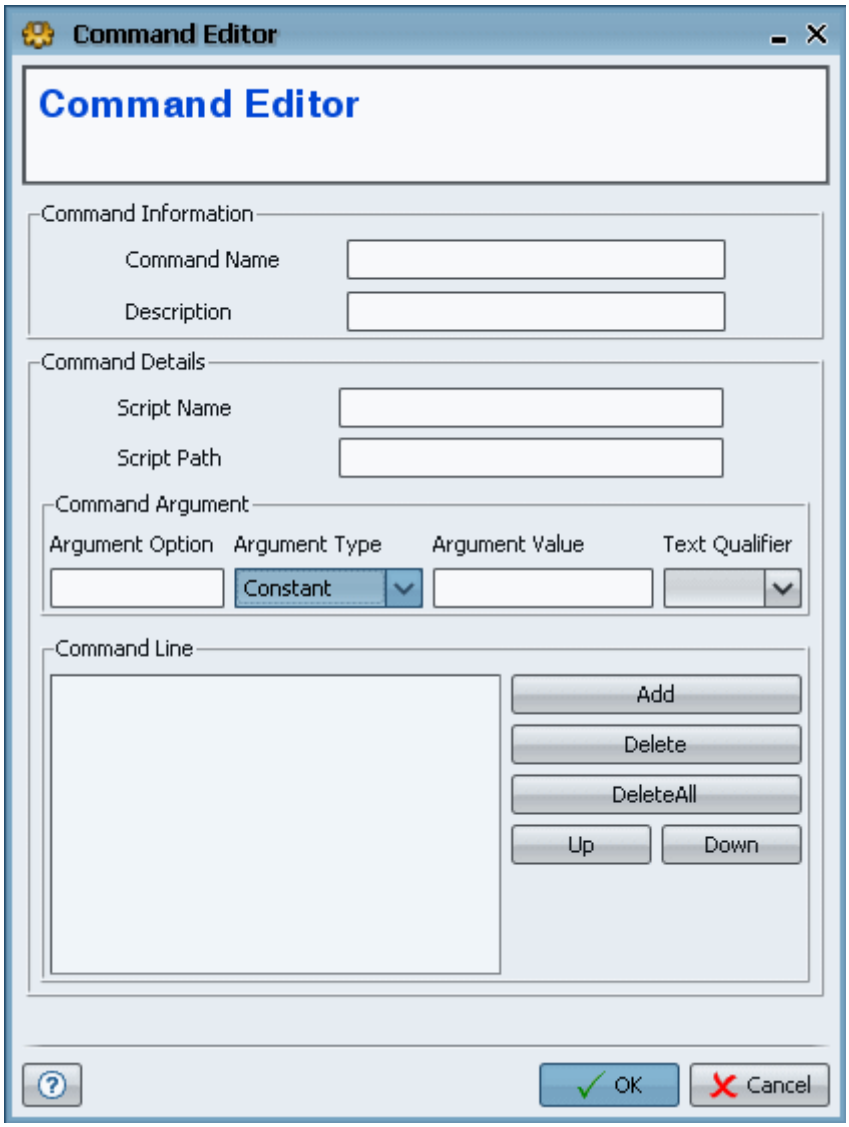


Figure 3-22: Command Editor

2 Configure your script with the following fields:

Parameter	Description
Command Information	
Command Name	A unique text identifier.
Description	A text description
Command Details	
Script Name	The name of the script to run
Script Path	The location of the script. Describe either a Windows or UNIX path.
Command Argument	
Argument Option	Enter a text value
Argument Type	Possible values are: Constant, Event Property
Argument Value	If Argument Type = Constant, this is a text field If Argument Type = Event Property then select from a list of possible attributes
Text Qualifier	Select whether this parameter needs double, single quotes, or no qualifier. When you select quotes, the parameter looks like this: -a “surrounded by quotes”.
Command Line	This section of the screen displays the script command as you assemble it. Click the **Add** button on the right to assemble the complete script command. Added parameters always appear last on the list in this area, but you can use the arrow keys to re-arrange their order, and the **Delete** button to remove parameters (but not the script). **Delete All** removes everything.

3 Click **Add** to assemble the complete script command. Added parameters always appear last on the list, but you can use the arrow keys to re-arrange their order, or use the **Delete** button to remove parameters (not the script). **Delete All** removes everything.

4 Click the **Up** or **Down** buttons to arrange the order of parameters.

5 Click **OK** to add your command script to the list of available scripts.

3.6.2 Deleting Commands

To delete a command:

1 In the Script Command Manager window (Figure 3-21), right click the command to remove and, from the context menu click **Delete**. A confirmation message is displayed.

2 Click **Yes** to confirm the deletion.

3.7 Event Forwarding NBI Manager

LOCAL CRAFT NOTE

The Event Forwarding NBI Manager is not applicable to the Local CRAFT Utility.

The Event Forwarding NBI Manager provides an interface where you can connect to other management systems, and effectively forward traps. Fault Management uses these definitions to enable it to forward notifications to those systems.

Event Forwarding NBI systems include any EMS system (a system receiving information from Fault Management), for example: Billing Management Systems, Support Management Systems, Network Management Systems, and Customer Service Systems.

To open the Event Forwarding NBI Manager:

Select *Fault Management* > Event Forwarding NBI *Manager* from the main menu or from the Navigation Pane.

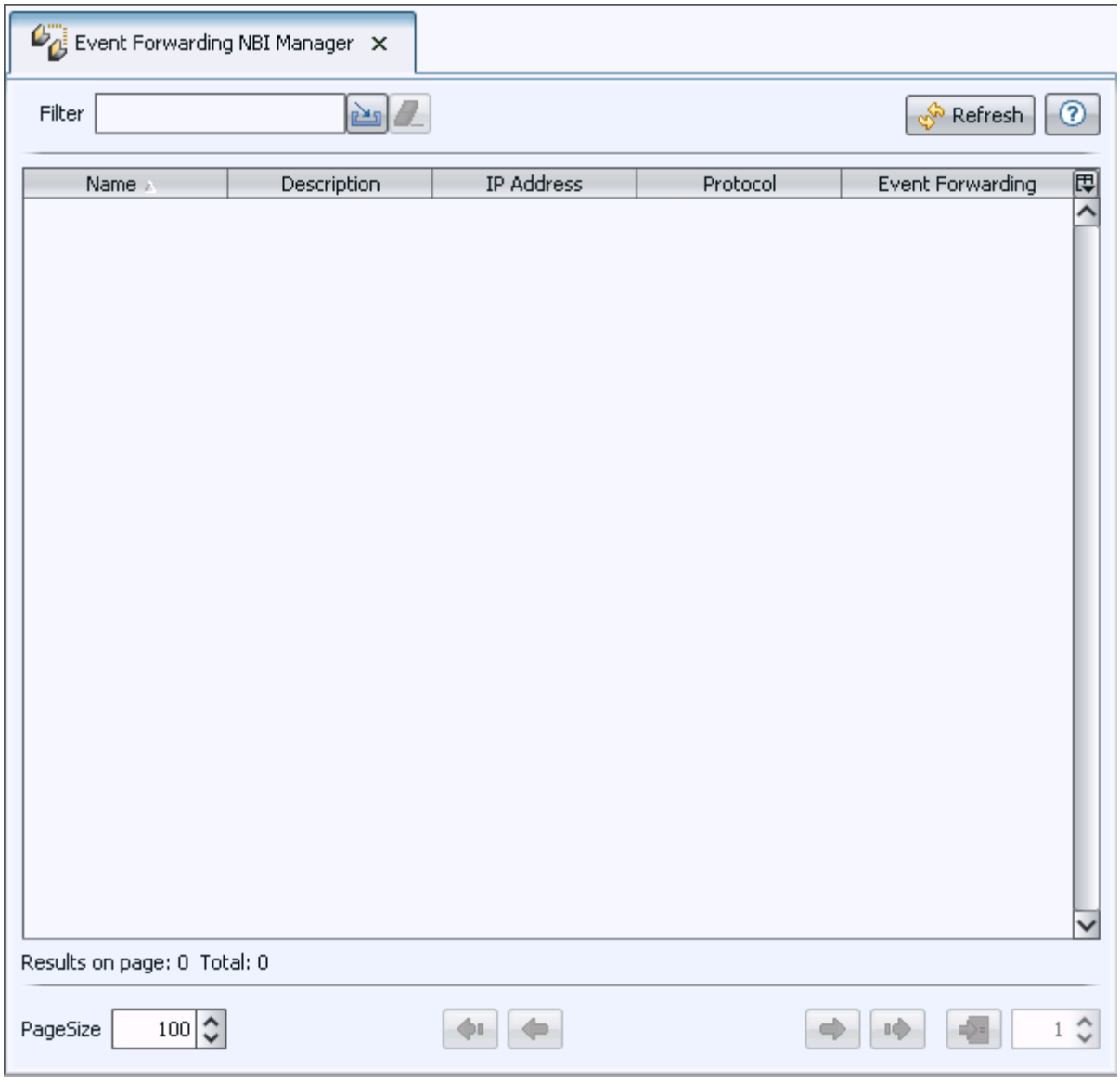


Figure 3-23: Event Forwarding NBI Manager

For each filter, the following information is displayed:

Parameter	Description
Name	The name of the filter.
Description	A description of the filter.
IP Address	The IP address of the higher manager
Protocol	The protocol governing the network management.
Event Forwarding	The event forwarding status.

From the Event Forwarding NBI Manager you can:

- Create or modify Event Forwarding NBI interfaces - Section 3.7.1
- Delete Event Forwarding NBI interfaces - Section 3.7.2
- Create and modify Event Forwarding NBI interface policies - Section 3.7.3
- Set up status notifications sent by the NMS Server for synchronisation - Section 3.7.4

NOTE

It is mandatory to define at least one policy for a Event Forwarding NBI interface in order to activate trap forwarding. Provided that the Event Forwarding NBI is enabled in the NBI Editor, if no policy has been defined, or if the policy is not enabled, the Event Forwarding NBI interface appears gray in the display, indicating that an action must be taken.

3.7.1 Creating or Editing Event Forwarding NBI Interfaces

To create a new Event Forwarding NBI interface:

1 Right click inside the Event Forwarding NBI Manager window (Figure 3-23) and select **New** to define a new Event Forwarding NBI interface, or right click an entry from the list and select **Edit**. The NBI Editor window is displayed:

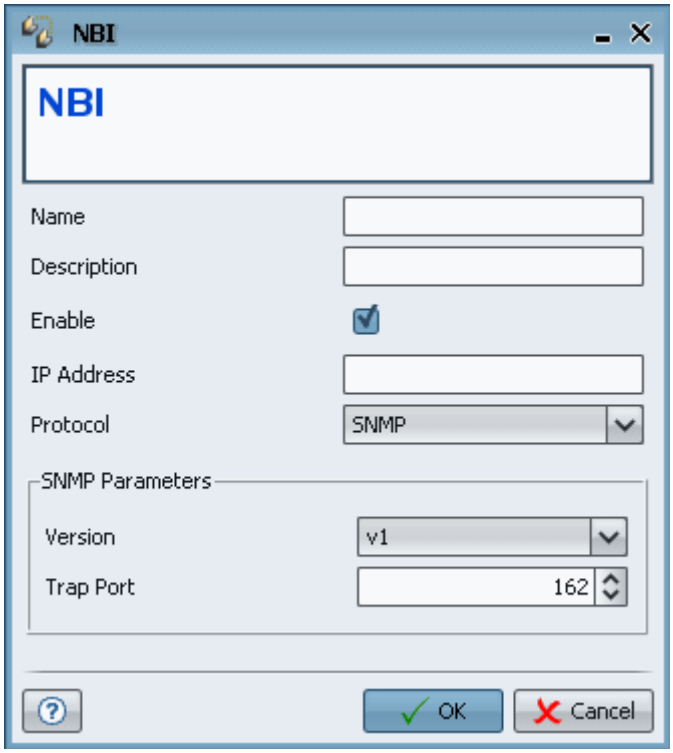


Figure 3-24: NBI Editor

2 Edit the information in the fields on all the pages as required.

Parameter	Description
Name	The name for the northbound interface.
Description	An optional description of the Event Forwarding NBI interface.
Enable	Check to enable trap forwarding
IP Address	The IP address of the remote host to which the traps will be forwarded.
Protocol	SNMP
SNMP Parameters	
Version	The SNMP version. Possible values are: v1, v2c or v3. For a complete list of all compatible SNMP versions for each device see Appendix E.
Trap Port	The port number to use to communicate with the system.

NOTE

The port configured in the NBI editor must match the port your system uses to communicate. Typically, SNMP devices use port 161 to receive set/get requests and port 162 to receive traps. So, typically you must configure Fault Management to forward traps to an OSS/SNMP client with a destination port of 162

3 Click **OK** to confirm your choices and save them to the database.

3.7.2 Deleting Event Forwarding NBI Interfaces

To delete an NBI:

1 In the Event Forwarding NBI Manager window (Figure 3-23), right click the filter to remove and select **Delete**. A confirmation message is displayed.

2 Click **Yes** to confirm the deletion.

3.7.3 Creating Event Forwarding NBI Interface Policies

Once you have defined the IP address to which to forward traps, the policy determines which traps to forward and when. At least one policy must be defined for a specific Event Forwarding NBI interface in order to activate trap forwarding. The policy manager displays the current policies defined for the specific interface

To open the NBI Policy List:

From the Event Forwarding NBI Manager window (Figure 3-23), right click an existing NBI from the list and select **Policy**. The NBI Policy List is displayed:

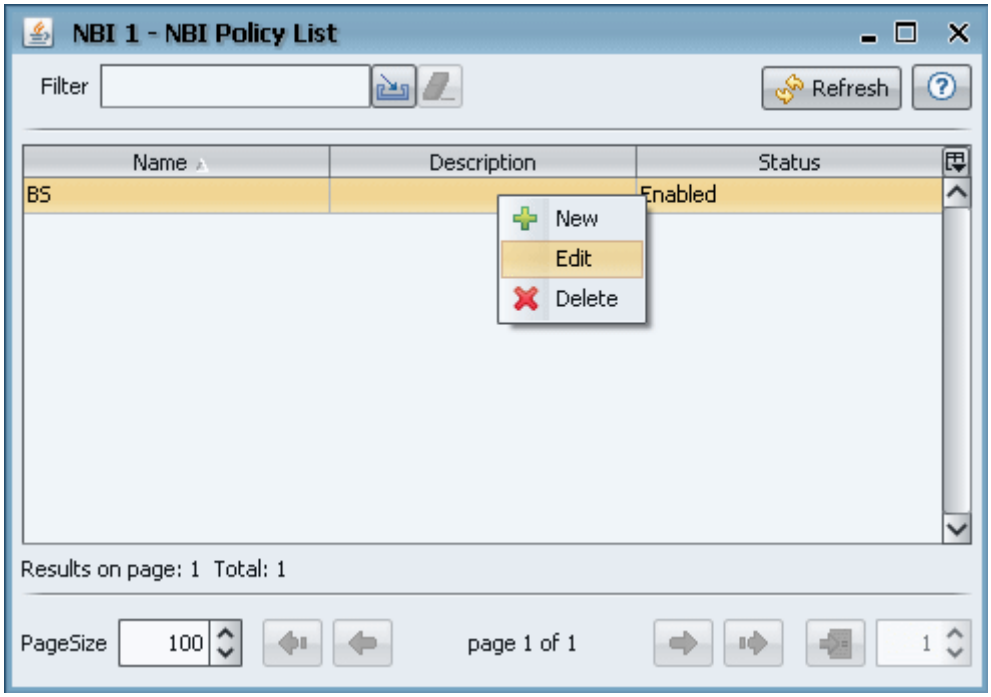


Figure 3-25: NBI Policy List

For each NBI Policy, the following information is displayed:

Parameter	Description
Name	The name of the policy.
Description	A description of the policy.
Status	The policy status

From the NBI Policy list you can:

- Create or modify NBI policies - Section 3.7.3.1
- Delete NBI policies - Section 3.7.3.2

3.7.3.1 Creating or Modifying NBI Policies

To create or modify an NBI policy:

1. Right click inside the NBI Policy window (Figure 3-25), and select **New** to define a new NBI policy, or right click an entry from the list and click **Edit**. The NBI Policy Editor window is displayed (Figure 3-26).

   The NBI Policy Editor window comprises the following main pages:

   - "General Page" on page 108
   - "Filter Tab" on page 109

2. Enter the relevant information in each of the pages.
3. Click **OK** to confirm your choices and save them to the database.

3.7.3.1.1 General Page

In the General page, you can add general information on the policy.

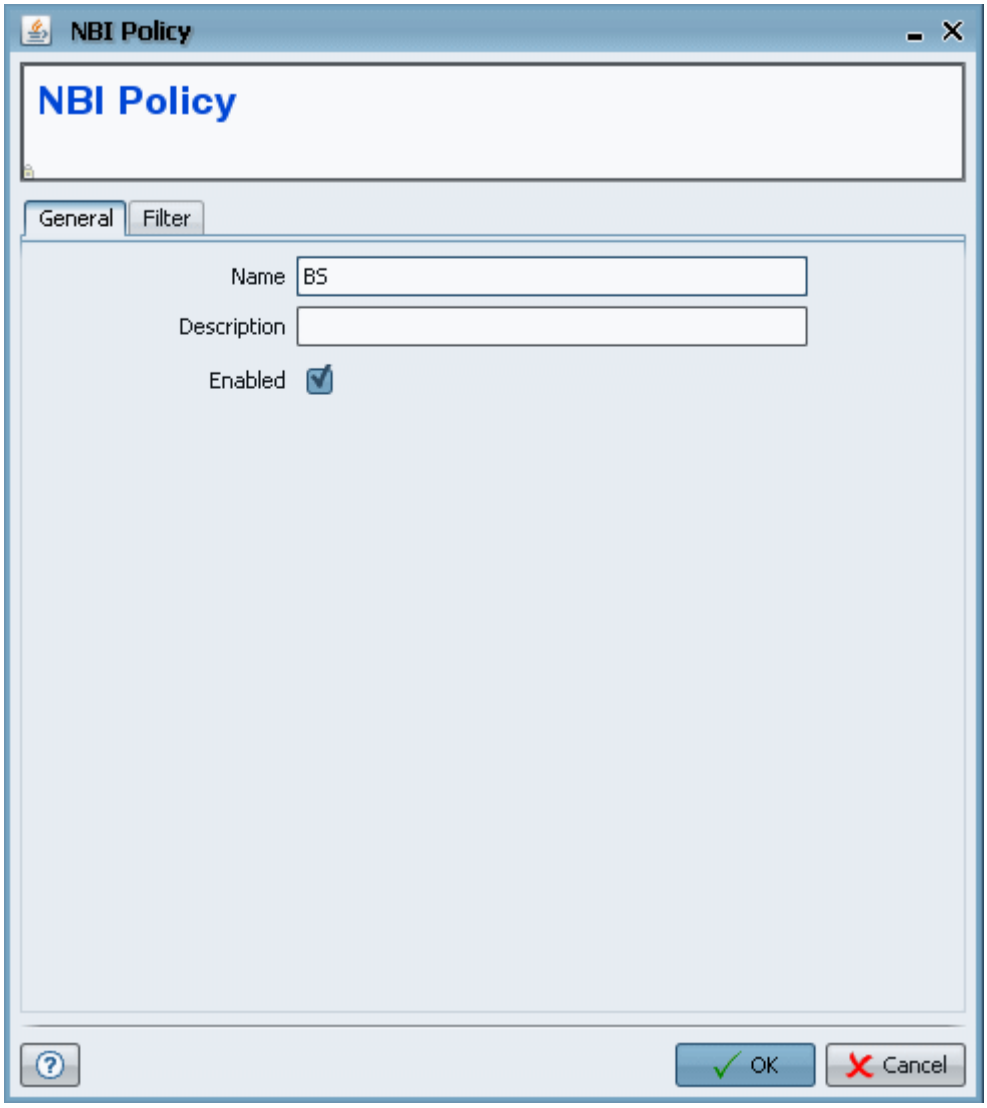


Figure 3-26: NBI Policy Editor - General Page

The General page comprises the following fields:

Parameter	Description
Name	The name of the NBI policy.
Description	An optional description of the policy.
Enabled	Check to enable the policy.

3.7.3.1.2 Filter Tab

The Filter tab lets you associate a filter with the NBI policy.

To create filter criteria:

1 From the NBI Policy Editor, click **Filter** to define filter criteria. The Filter Page is displayed:

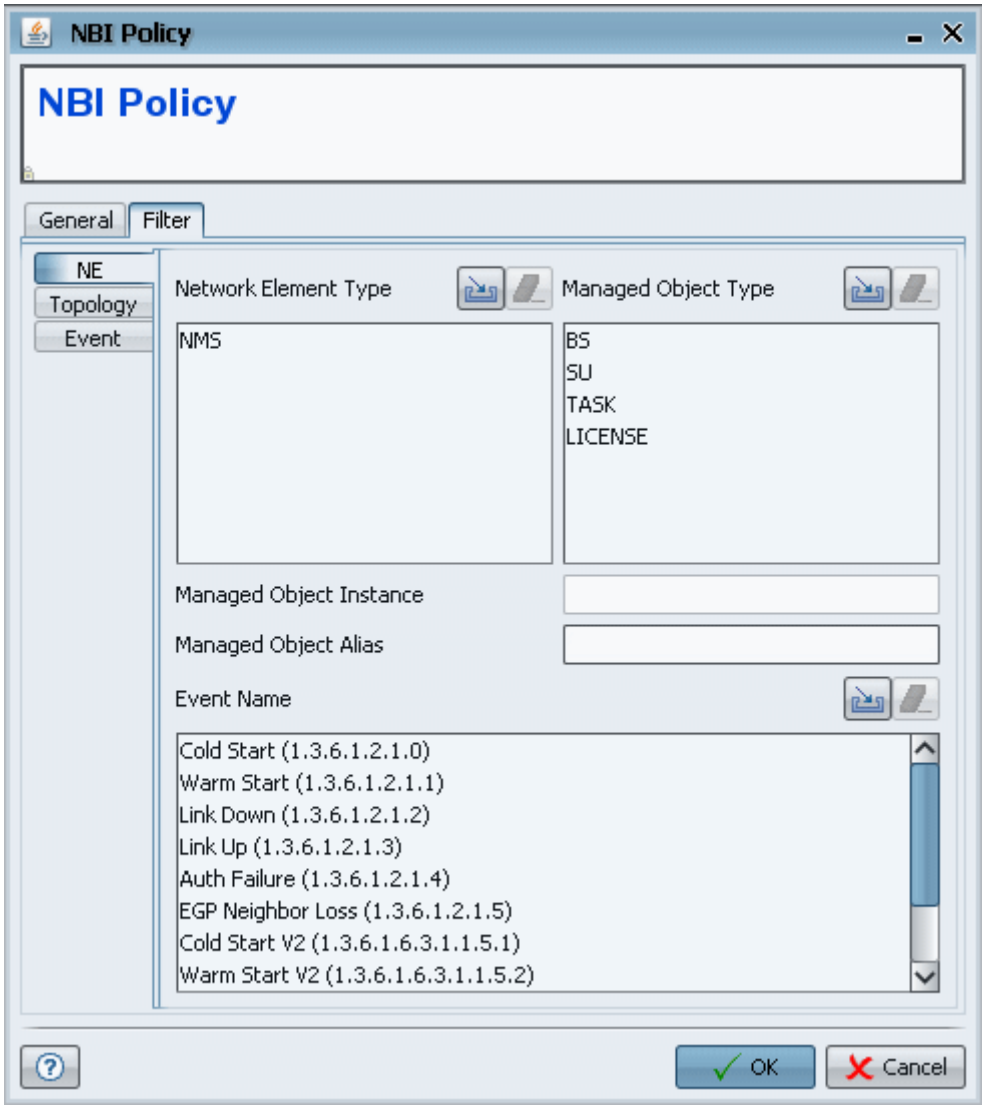


Figure 3-27: NBI Policy Editor - Filter Page: NE

The main Filter page comprises the following sub-tabs:

- "NE Page" on page 111
- "Topology Page" on page 111
- "Event Page" on page 112

2 Enter the relevant information in each of the pages. When there is a select icon, click the icon to select elements from a list. Click the eraser icon to remove selected elements.

3 Click the **OK** button to confirm your choices and save them to the database

3.7.3.1.2.1 NE Page

The NE page (Figure 3-27) lets you enter the following filter criteria:

Parameter	Description
Network Element Type	Select the type of the network element from which the alarm originated from.
Managed Object Type	Select the type of managed object from which the alarm originated.
Managed Object Instance	Enter a specific instance name of the object where the alarm originated.
Managed Object Alias	A user defined name for the managed object.
Event Name	Select the name of the alarm.

3.7.3.1.2.2 Topology Page

The Topology Page lets you select the following filter criteria:

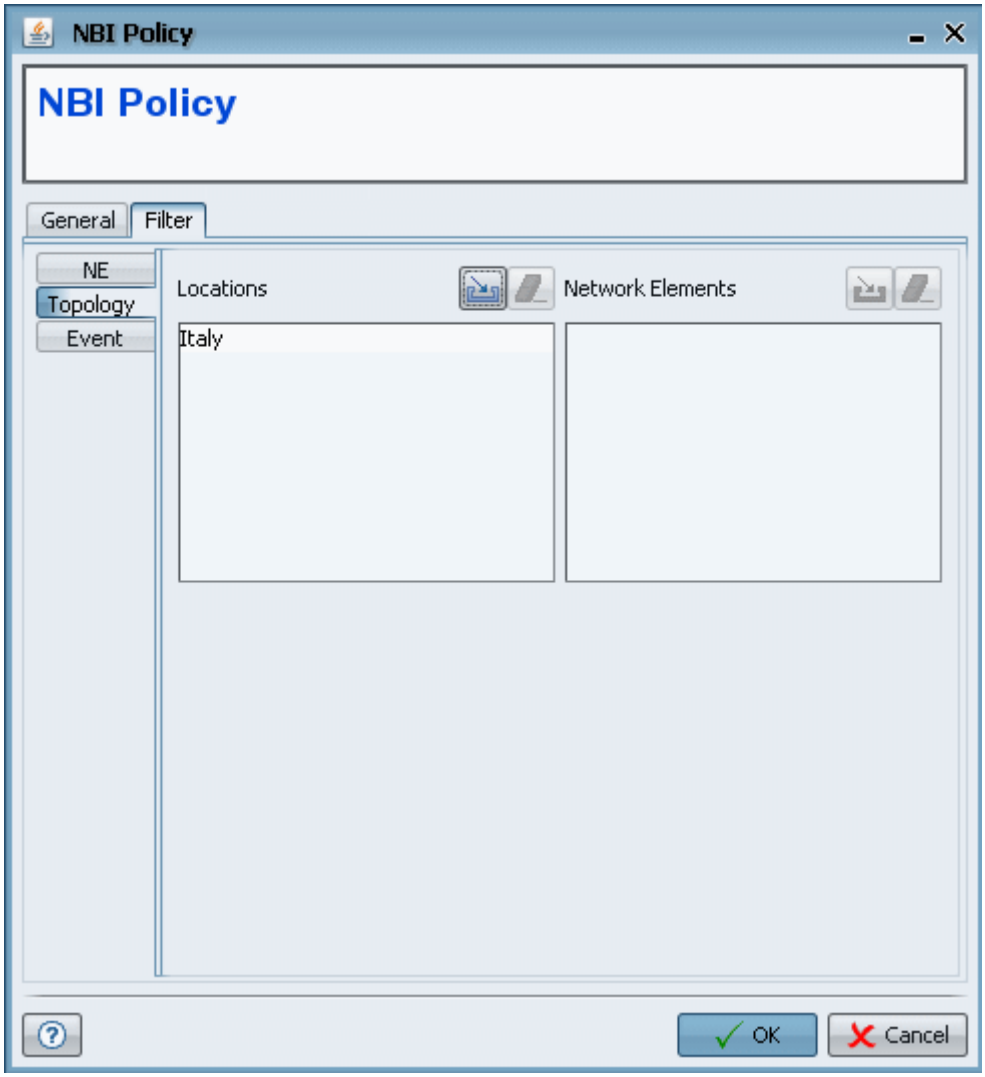


Figure 3-28: NBI Policy Editor - Filter Page: Topology

Parameter	Description
Locations	Select the physical location of the equipment.
Network Elements	Select the network element from which the alarm originated. This option is available only if the user selected at least one Network Element Type which is different from "NMS" (in the NE page).

3.7.3.1.2.3 Event Page

The Event page lets you select the following filter criteria:

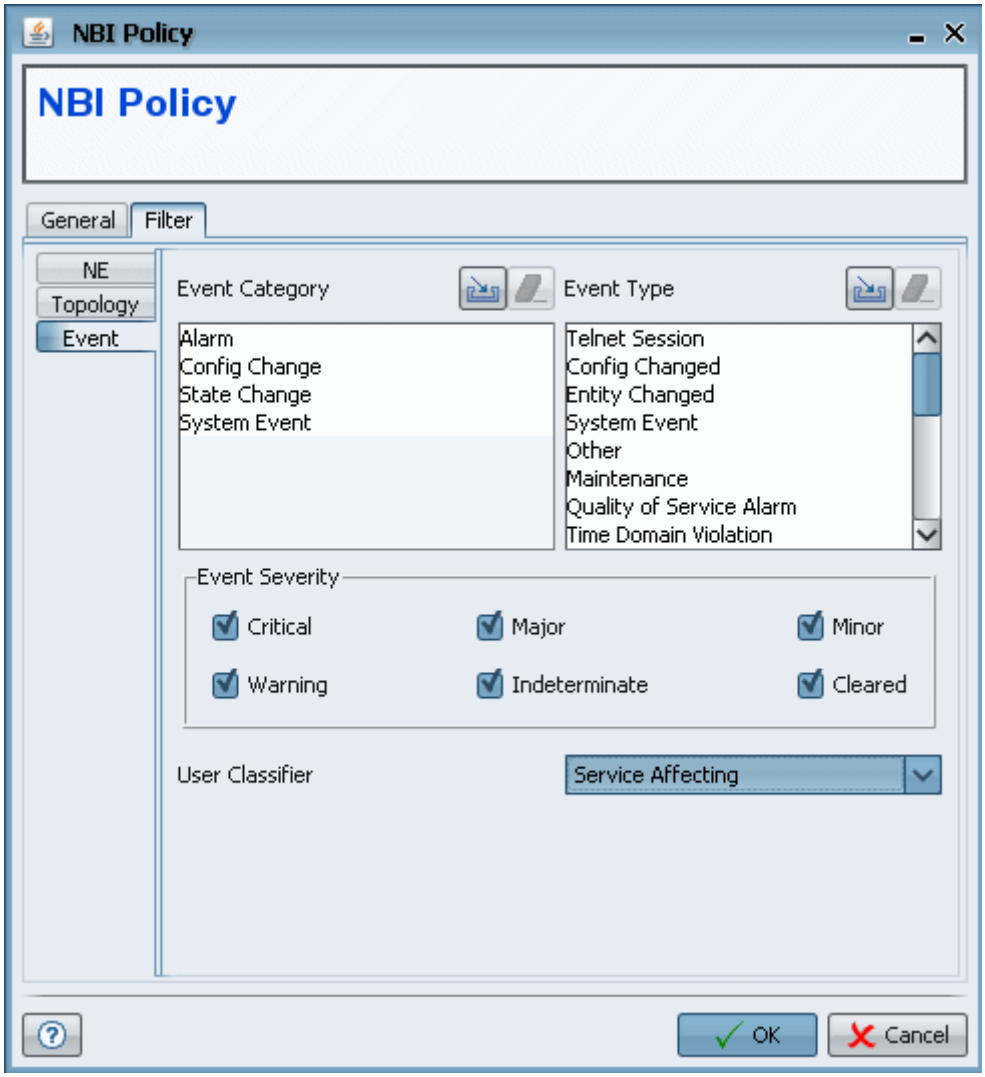


Figure 3-29: NBI Policy Editor - Filter Page: Event

Parameter	Description
Event Category	Select the category classification of the event. Possible values are: Alarm, State Change, System Event, Config Change
Event Type	Select the classification type of the event. The possible values differ according to the event category.
Severity	Check the boxes for the relevant alarm severity. For more information on alarm severity see Section 3.3.1.2.
User Classifier	Select the User Classifier. Possible values: None, Service Affecting

3.7.3.2 Deleting NBI Policies

To delete an NBI policy:

1 In the Event Forwarding NBI Manager window (Figure 3-23), right click the policy to remove and select **Delete**. A confirmation message is displayed.

2 Click **Yes** to confirm the deletion.

3.7.4 NBI Notifications Global Settings

The NBI Notifications Global Settings configures the synchronization notifications sent by the NMS to the OSS.

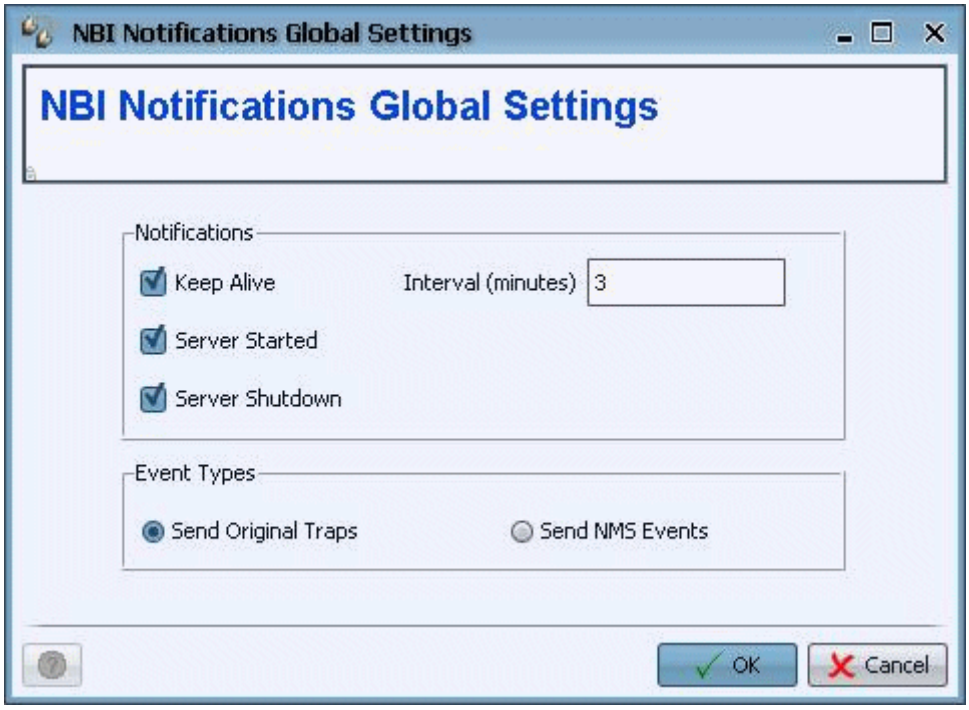


Figure 3-30: NBI Notifications Global Settings

The following settings are available:

Parameter	Description
Notifications	
Keep Alive	Sends keep alive notifications at predefined time intervals as long as the NMS server is active. Check to enable, uncheck to disable.

Parameter	Description
Interval (minutes)	Defines the time interval (in minutes) between successive keep alive notifications. Use the text box to enter the desired value.
Server Started	Sends a notification message when the server has started up. Check to enable, uncheck to disable.
Server Shutdown	Sends a notification message when the server is shutting down. Check to enable, uncheck to disable.
Event Types	
Send Original Traps	Select this option to forward traps in their original format, just as they are received from the device.
Send NMS Events	Select this option if you want the sent traps to include all the relevant information stored in the fault management database.

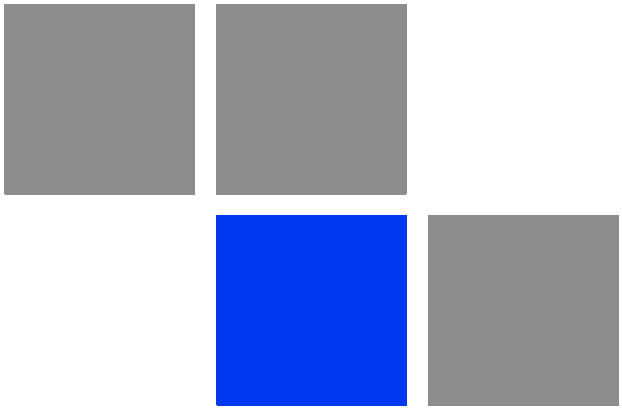
NOTE

In order to enable synchronization with the NMS, the following RW parameters must be configured on the OSS/SNMP client:

Parameter	Description
sendOperationalAlarms	Enables/Disables alarm synchronization. The following values apply: ■ 0 - Synchronization disabled ■ 1 - Synchronization enabled ■ 2 - Synchronization based on a custom time interval ■ 3 - Synchronization based on a custom SeqNo interval
opAlarmsCustomIntervalStart	Interval start for custom time/SeqNo interval based synchronization
opAlarmsCustomIntervalEnd	Interval end for custom time/SeqNo interval based synchronization

NOTE

The OSS/SNMP client uses the 16162 port to send synchronization request to the NMS.



Chapter 4

Configuration Management

In This Chapter:

This chapter describes functionalities used by the NMS to support integration with Google Earth (see Appendix D for more information about Google Earth integration). These features are:

- "CPE Types Selector" on page 118
- "File Generation Parameters" on page 120

4.1 CPE Types Selector

The CPE Types Selector allows users to indicate the frequency bands, power and antenna gains used by the deployed CPEs. Based on this information, sector coverage representations can be estimated and displayed in Google Earth.

To open the CPE Types Selector:

Select *Configuration Management* > *CPE Types Selector* from the main menu. The CPE Types Selector window opens.

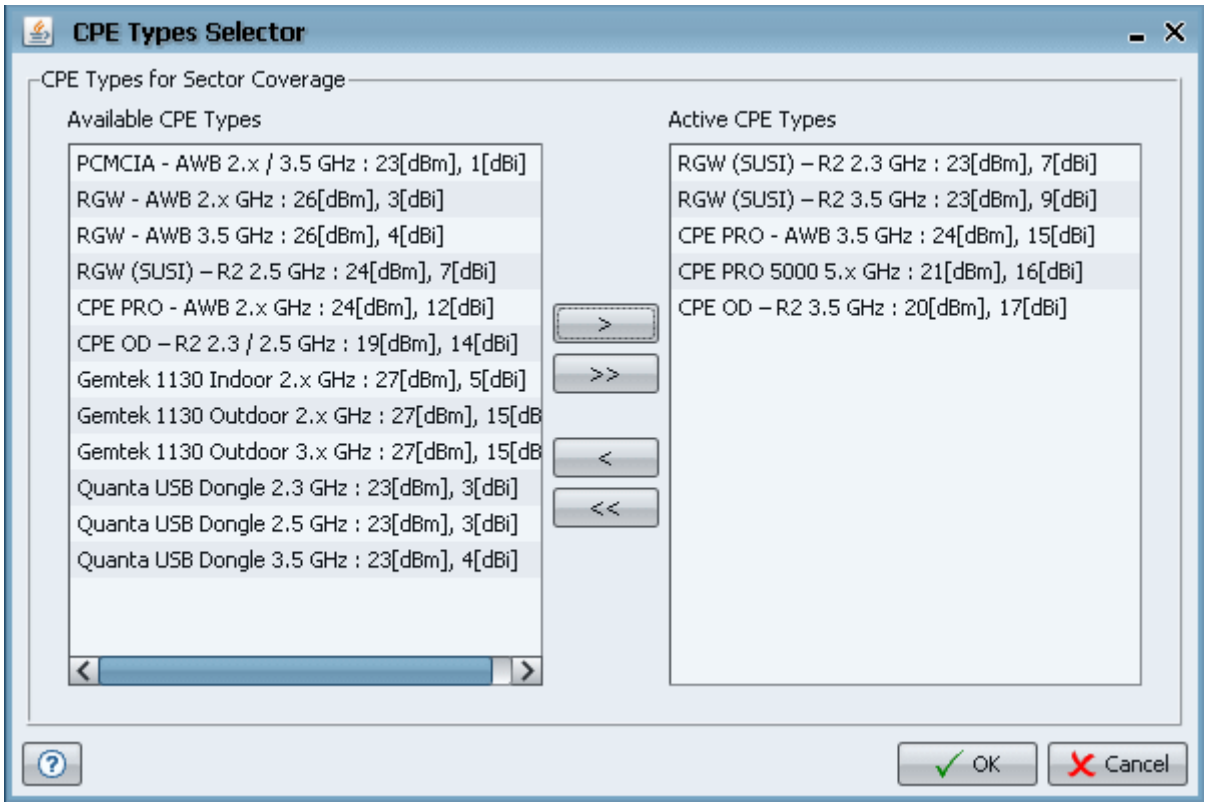

CPE Types Selector
CPE Types for Sector Coverage
Available CPE Types
PCMCIA - AWB 2.x / 3.5 GHz : 23[dBm], 1[dBi]
RGW - AWB 2.x GHz : 26[dBm], 3[dBi]
RGW - AWB 3.5 GHz : 26[dBm], 4[dBi]
RGW (SUSI) – R2 2.5 GHz : 24[dBm], 7[dBi]
CPE PRO - AWB 2.x GHz : 24[dBm], 12[dBi]
CPE OD – R2 2.3 / 2.5 GHz : 19[dBm], 14[dBi]
Gemtek 1130 Indoor 2.x GHz : 27[dBm], 5[dBi]
Gemtek 1130 Outdoor 2.x GHz : 27[dBm], 15[dB
Gemtek 1130 Outdoor 3.x GHz : 27[dBm], 15[dB
Quanta USB Dongle 2.3 GHz : 23[dBm], 3[dBi]
Quanta USB Dongle 2.5 GHz : 23[dBm], 3[dBi]
Quanta USB Dongle 3.5 GHz : 23[dBm], 4[dBi]
>
>>
<
<<
Active CPE Types
RGW (SUSI) – R2 2.3 GHz : 23[dBm], 7[dBi]
RGW (SUSI) – R2 3.5 GHz : 23[dBm], 9[dBi]
CPE PRO - AWB 3.5 GHz : 24[dBm], 15[dBi]
CPE PRO 5000 5.x GHz : 21[dBm], 16[dBi]
CPE OD – R2 3.5 GHz : 20[dBm], 17[dBi]
OK
Cancel

Figure 4-1: CPE Types Selector

Select one or more CPE types that are deployed:

- Use the > button to add the currently selected available CPE type to the Active CPE Types list

- Use the >> button to add all currently available CPE types to the Active CPE Types list
- Use the < button to remove the currently selected active CPE type from the list
- Use the << button to remove all the CPE types that are currently active from the list

4.2 File Generation Parameters

The NMS can be configured to generate a file containing information about the network elements' locations. This file uses the Keyhole Markup Language (.kml) format, which is compatible with Google Earth, allowing it to display the network's topography.

To open the File Generation Parameters:

Select *Configuration Management* > *File Generation Parameters* from the main menu. The File Generation Parameters window opens.

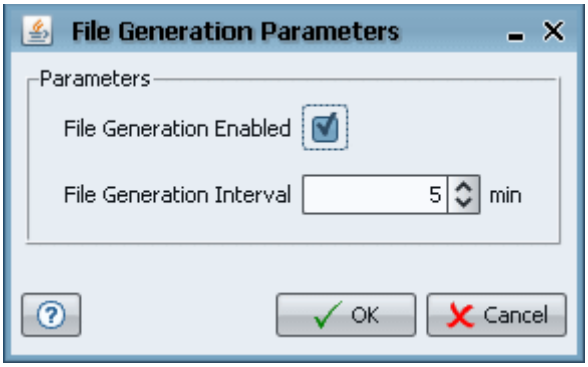
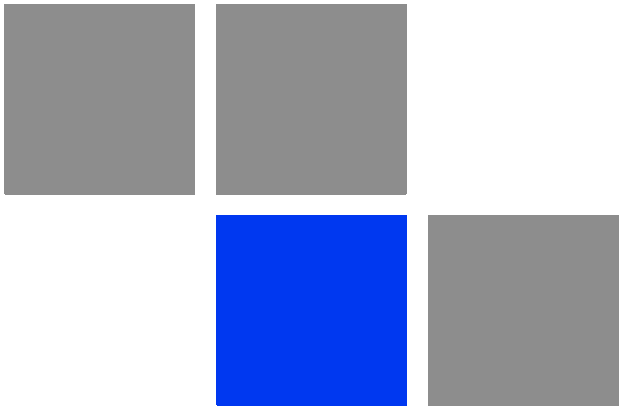
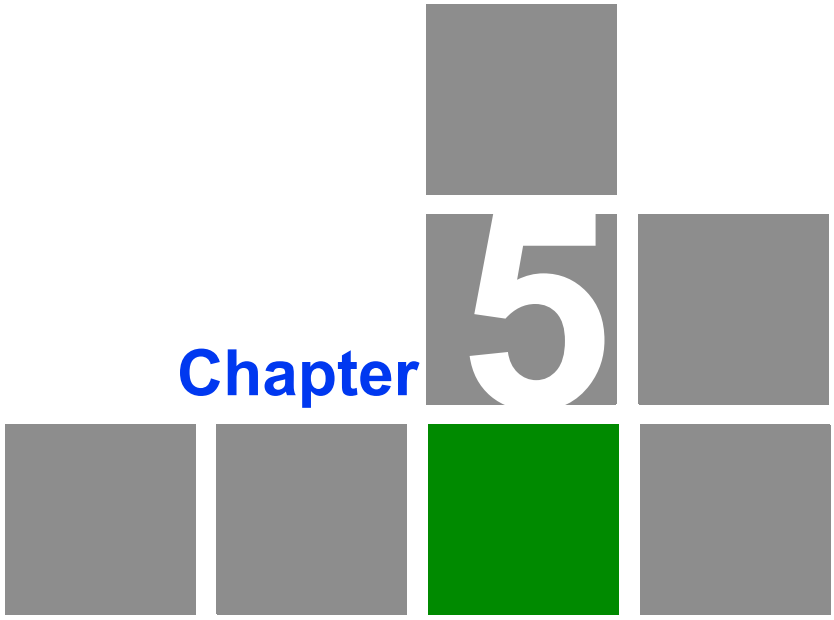


Figure 4-2: File Generation Parameters

The following parameters can be configured:

Parameter	Description
File Generation Enabled	Check to generate the .kml file, and uncheck if you don't want the file to be generated. The feature is enabled by default. If you don't plan to use Google Earth you may disable it.
File Generation Interval	Enter how often (in minutes) the .kml file is updated. The default value is 5 minutes.





Chapter 5

Administration

In This Chapter:

- "Introduction" on page 123
- "Task Manager" on page 124
- "File Manager" on page 141
- "Contact Manager" on page 143
- "License Manager" on page 147 - not applicable to the Local CRAFT Utility

5.1 Introduction

The Administration node in the Navigation Pane comprises the following system-wide utilities:

- Task Manager - enables to manage system-wide tasks, such as SW upgrade, Network Discovery (not applicable to the Local CRAFT Utility), PM collection, etc. See Section 5.2.
- File Manager - enables to manage files that are stored in the database. These files and functionality of the manager are product line dependent. For details refer to the relevant *Device Driver Manual*. Refer to Section 5.3.
- Contact Manager - enables to organize and manage your contacts. Refer to Section 5.4
- License Manager (not applicable to the Local CRAFT Utility) - enables to view information about valid licenses. See Section 5.5.

5.2 Task Manager

This section includes:

- "Using The Task Manager" on page 124
- "The Task Scheduler" on page 129
- "The Task Results Viewer" on page 131
- "Network Discovery Task" on page 133 - not applicable to the Local CRAFT Utility
- "Database Aging Tasks" on page 134
- "Discovery Task" on page 136 - not applicable to the Local CRAFT Utility

5.2.1 Using The Task Manager

Tasks are operations that are performed on a large number of system entities (such as equipment, services, etc.). They run in the background, allowing the network administrators to continue managing the network while they run. After a task has completed, or upon termination of a task, a report is issued.

The Task Manager displays information on defined tasks and enables to create new tasks, edit, schedule, run or delete existing tasks. If there is any error in the parameters definition such as a missing parameter, contradicting definitions or a non-valid value, the relevant error message(s) will be displayed at the top section of the window, and a red border around the relevant entries will indicate the parameters that should be corrected. The Task Manager also enables to abort running tasks and to view reports on completed and aborted tasks.

As tasks availability and functionality differ depending on the configured device driver, refer to the relevant *Device Driver Manual* for a detailed description of performing these tasks.

The following are the common available types of tasks:

- "Network Discovery Task" - Section 5.2.4 - not applicable to the Local CRAFT Utility
- "Database Aging Tasks" - Section 5.2.5

- "Discovery Task" - Section 5.2.6 - not applicable to the Local CRAFT Utility

To access the Task Manager:

1 Select *Administration* > *Task Manager* from the main menu or the Navigation Pane. The Task Manager displays a list of defined tasks.

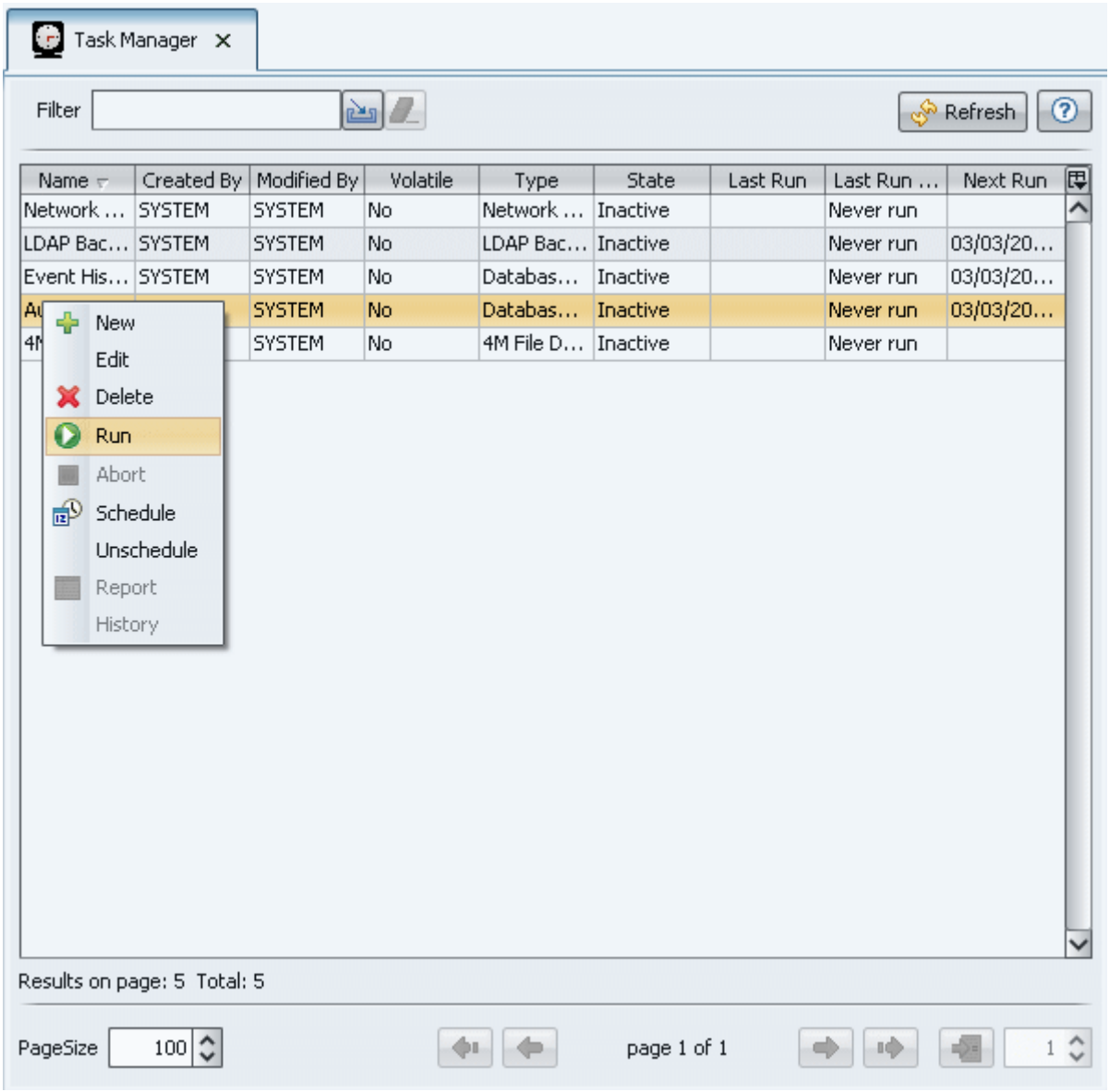


Figure 5-1: Task Manager

The following information is displayed for each defined task:

Parameter	Description
Name	A unique name of the task.
Created by	The user name of the task creator.
Modified by	The name of the user who last modified the task.
Volatile	Describing if the task's behavior varies unpredictably. This type of tasks is not saved in the database. It can be run only once.
Type	The type of task. The available task types are: ■ Network Discovery Task (not applicable to the Local CRAFT Utility) ■ Database Aging Task ■ Range Discovery Task (not applicable to the Local CRAFT Utility) Additional tasks according to the installed device driver(s).
State	The current state of the task: Active, Inactive, Waiting, Stopping.
Last Run	The date and time the last time the task was run.
Last Run Result	The result of the task's last run: Completed/Completed with errors/Aborted/Never run.
Next Run	The date and time the next time the task is scheduled to run, or Not Scheduled.

2 The following controls are available in the Task Manager's context menu:

Control	Description
New	Adds a new task to the Task list. When selected, it opens the Task Wizard. The wizard has three steps: 1 Create New Task - Define the task's name, description, type and the network equipment to which it applies. 2 Configure Task - Define the specific task parameters. This step is customized based on the type of task and network equipment. 3 Finish Task - Choose how to use the task once you are finished defining it: » Run it immediately (Run Now) » Don't run it (None) » Schedule it to be run later (Schedule)
Edit	■ For an Inactive Task: Opens the Task Editor for the selected Inactive task, allowing to edit the task parameters. Not available if more than one task is selected. From the Task Editor, you can also run the task by clicking **Run**. ■ For Active Task: Opens the Runtime Results window displaying the task's progress.
Delete	Deletes the selected task from the database. Right click the task to remove and select **Delete**. The application prompts you for confirmation. Not available for active tasks and for system tasks (Network Discovery Task and Database Aging Tasks). Scheduled tasks cannot be deleted. To delete a scheduled task, you need to first clear the schedule (see below).
Run	Manually executes the task. While the task is running, the state changes from Inactive to Active. The option is unavailable for currently running tasks. The Run button is also available in each of the task windows. If there are more than 20 active tasks, some of the tasks may change from Inactive to Waiting. When attempting to run a task which affects equipment that is not part of the user's visibility domain, a meaningful message will be displayed in the task report. For more information about domain management, see "User Domain Manager" on page 185.

Control	Description
Abort	Aborts the selected running task. Available for running tasks only. Upon selecting the **Abort** option, a confirmation message is displayed. Click **Yes** to abort the task. The task's *State* changes to *Inactive* and the *Last Run Result* to *Aborted*.
Schedule	Opens the Schedule Editor, enabling to schedule the activation of the task. See Section 5.2.2.
Unschedule	Clears the schedule for the selected task. Active only for scheduled tasks.
Report	Opens the Task Report window, enabling to view a report of the last execution of the selected task. Not available for tasks that were never run. The Report window can also be accessed from each task editor. The Report button in the task editors is inactive while the task is running and will become active only after the task has completed. You can save the report to the file system by clicking the **Save As** button in the Task Report window. The system will prompt you to save large reports. You can print the report directly from the report window. Not available for tasks that were never run.
History	Opens the Task Results window, displaying a list of all past activations of the selected task and their results. Not available for tasks that were never run.

When editing tasks, the following general controls are available:

Click	To:
OK	Save the changes and close the task window
Cancel	Close the window without saving
Run	Execute the task
Abort	Stop the task
View Report	Open the scan report (see Section 5.2.3)
Schedule	Set a time to run the task (see Section 5.2.2)

Additional task status information may appear at the bottom of the task window. For example: *Completed*, *Never Run*, or *Inactive*

5.2.2 The Task Scheduler

Tasks can be scheduled to run once, or at predefined recurrence intervals. Examples of recurring tasks include Network Discovery and Database Aging.

To schedule a task:

1 In the Task Manager window, right click a task from the list and select **Schedule**. Alternatively, you can schedule a task during task creation, or while editing a task, by clicking on the scheduler icon at the bottom left of the task window. The Schedule Editor opens.

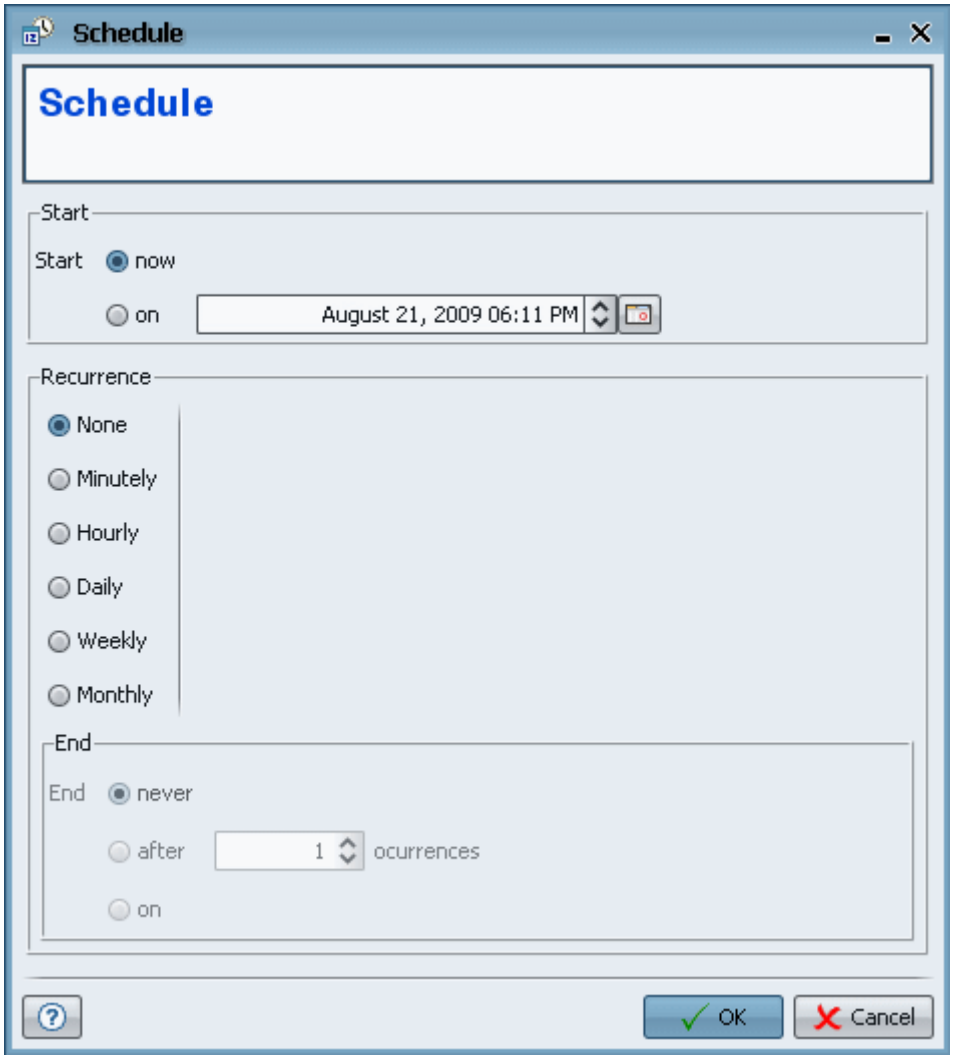


Figure 5-2: Schedule Editor

The Schedule Editor includes the following parameters:

Parameter	Description
Start	The start time for the task. Select one of the following options: ■ Now ■ On - set a specific start date and time. You can highlight the value to change (month, day, year) and click on the up/down arrows to change the value, or you can pick a specific date using the calendar icon. You can also type in the date and time as follows: MMMM DD, YYYY HH:MM AM/PM.
Recurrence	Set the recurrence interval between each task execution. Available intervals include: ■ None - no recurrence (default) ■ Minutely - specify the number of minutes. (the range is 1-1,440) ■ Hourly - specify the number of hours. (the range is 1-96). ■ Daily - specify the number of days. (the range is 1-60) ■ Weekly - select one of the following options: » Recur every - enter the number of weeks between task executions (the range is 1-20) » Day - specify the day of the week (Sunday to Saturday) and the number of weeks between task executions (the range is 1-20). ■ Monthly - select one of the following options: » Recur every - enter the number of months between task executions (the range is 1-36) » Day - specify the day in the month (1-31) and the number of months between task executions (the range is 1-36).

Parameter	Description
End	The end time for a recurring task (only). Select one of the following options: ■ Never - enable tasks to be executed indefinitely ■ After N occurrences (where N is a number between 1-65,000) - set the number of occurrences after which the task's scheduling will be cleared. ■ On - set an end date and time. You can highlight the value to change (month, day, year) and click on the up/down arrows to change the value, or you can pick a specific date using the calendar icon. You can also type in the date and time as follows: MMMM DD, YYYY HH:MM AM/PM.

2 Set the **Start** and **End** time and optionally select a recurrence interval.

3 Click **OK** to apply the schedule for the selected task.

5.2.3 The Task Results Viewer

The Task Results window displays a list of all past activations of the task selected in the Task Manager window and their results. Not available for tasks that were never run.

To use the Task Results window:

1 In the Task Manager window, right click a task from the list and select **History** from the context menu. The Task Results window is displayed.

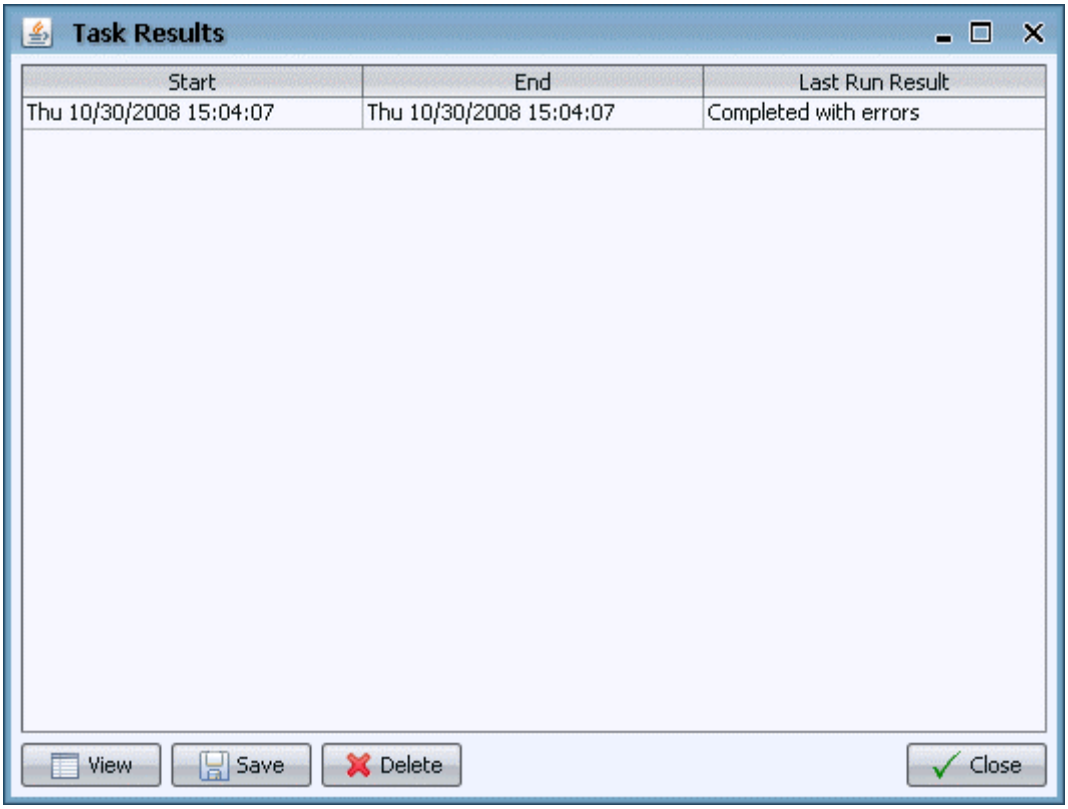


Figure 5-3: Task Results Window

The Task Results window displays the following information for each listed activation:

Parameter	Description
Start	The start time of the activation.
End	The end time of the activation.
Result	The result of the activation.

2 Use the Task Results controls as required:

Action	Description
View	Displays the task results.
Save	Enables to save the task results to an external file. Click and browse to a location in the file system, enter a name for the file and click **Save**.
Delete	Deletes the selected task.

Action	Description
Close	Closes the Task Results window.

5.2.4 Network Discovery Task

LOCAL CRAFT NOTE

The Network Discovery Task is not applicable to the Local CRAFT Utility.

The Network Discovery task is a system task that scans the entire network for new devices. The scope of the network is defined in the Discovery Settings window (see Section 2.3). The Network Discovery task can only be modified, not deleted.

To edit the Network Discovery Task

1 In the Task Manager window, right click the Network Discovery task from the list and select **Edit,** or double-click the task's entry. If the task is Active, the Runtime Results window opens, displaying the status of the running task.

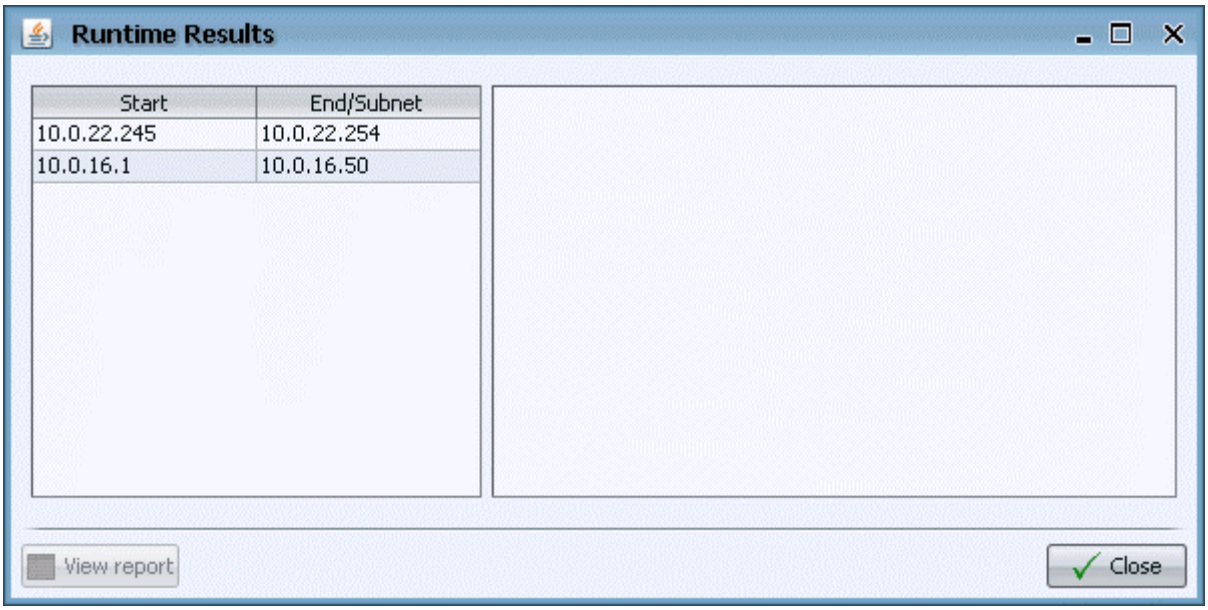


Figure 5-4: Network Discovery Task - Runtime Results

If the task is Inactive, the Network Discovery Task is displayed.

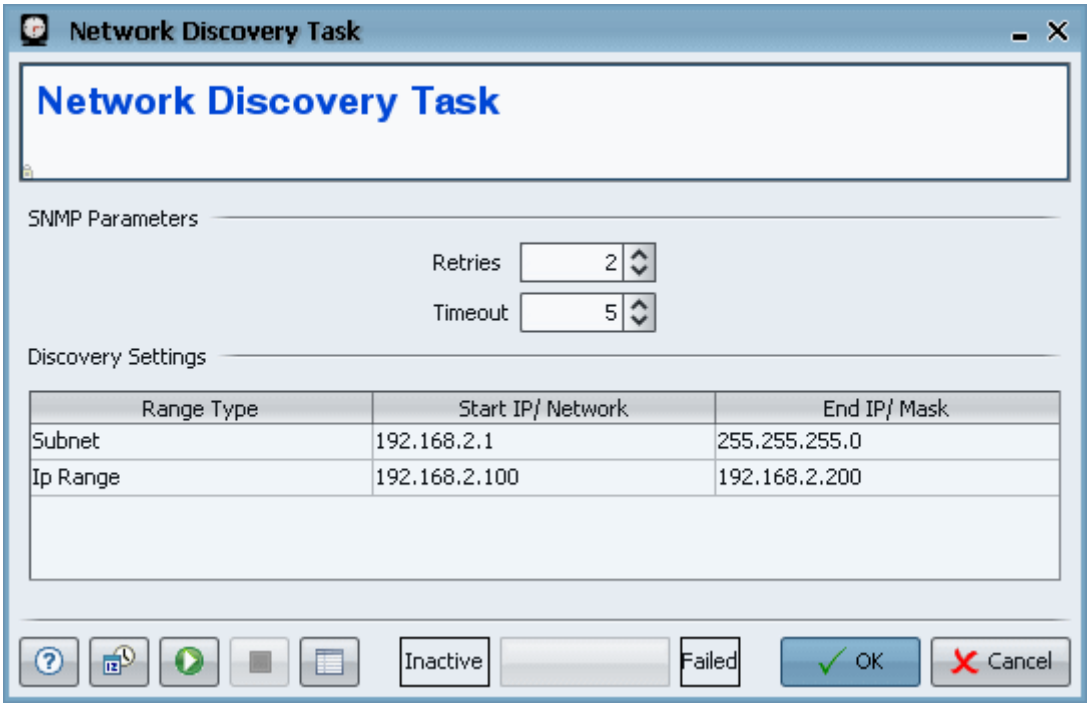


Figure 5-5: Network Discovery Task Window

2 You can modify the SNMP Parameters of the Network Discovery Task as required (the Discovery Settings are read-only and can be modified only in the Discovery Settings manager):

Parameter	Description
Retries	The maximum number of retries for SNMP communication. The range is from 0 to 255.
Timeout	The maximum time in seconds that the requesting process waits for a response before attempting a retransmission (or aborting if the maximum number of retries has been reached). The available range is 1 to 3,600 seconds.

3 Use the Editor controls as required.

5.2.5 Database Aging Tasks

The Database Aging tasks set the maximum number of alarms shown in the Event History (Section 3.3) and Audit Log (Section 6.2) and automate database management tasks. Database Aging tasks are system tasks and can only be modified, not deleted.

To edit the Database Aging Task:

1 In the Task Manager window, right click the Database Aging task from the list and select **Edit**. If the task is Active, the Runtime Results window opens, displaying the status of the running task.

If the task is Inactive, the Database Aging Task is displayed.

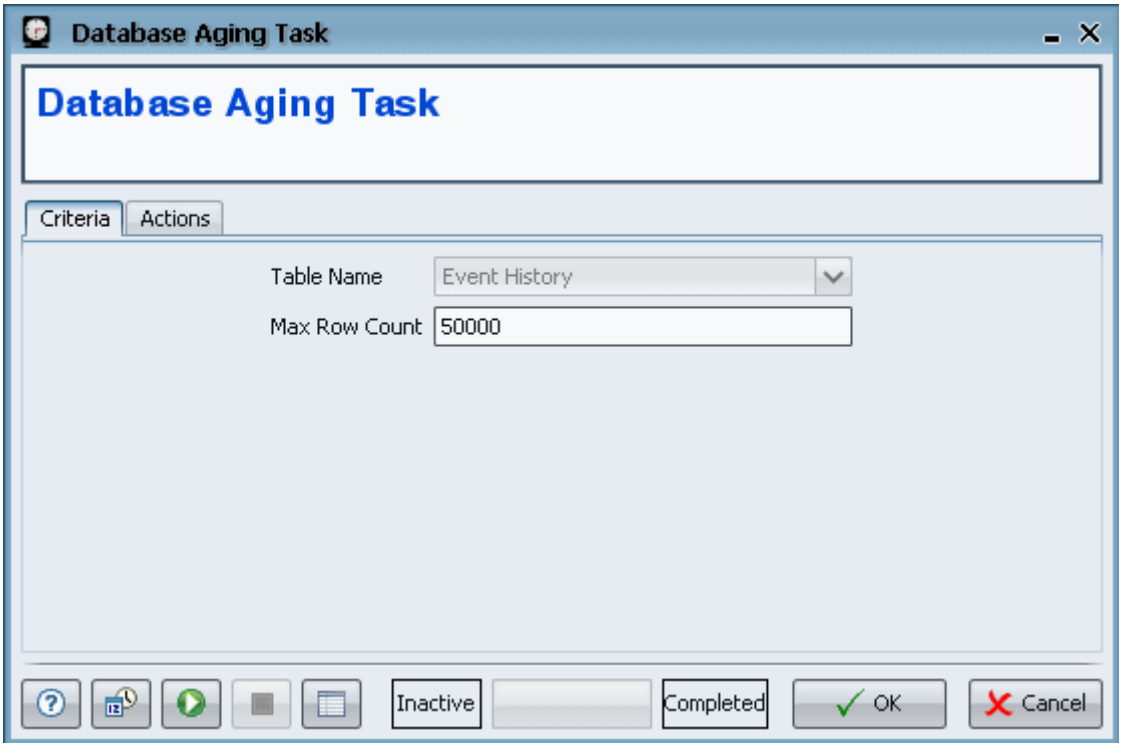


Figure 5-6: Database Aging Task Window

The Database Aging Task window includes the following information in two tabs:

Parameter	Description
Criteria tab	
Table Name	The name of the table. Possible values are Event History and Audit Logs. This is a read only field and cannot be modified

Parameter	Description
Max Row Count	The maximum number of alarms in the database. **Note:** When the number of alarms exceeds the value entered in the *Max Row Count* field by 25%, an alarm is sent. When the number of alarms exceeds the value entered in the *Max Row Count* field by 50%, the oldest alarms are deleted so that the total number of alarms in the database equals the value defined in the *Max Row Count* field.
Actions tab	
Secondary Storage	File type of the archived records. Possible values are: None, CSV
Destination	A disk location for archiving. The default location is: <Management_System>/filesystem/archive.

5.2.6 Discovery Task

LOCAL CRAFT NOTE

Craft

The Discovery Task is not applicable to the Local CRAFT Utility.

The Discovery Task enables to scan a predefined range of IPs for new and modified devices.

To open the Range Discovery Task window:

1 In the Task Manager window:

» Right click and select **New**. The Task Wizard opens.

» In the Task Wizard, select **Discovery Task** in the **Category** field, fill in the rest of the fields according to your preferences and click **Next** to proceed to the **Discovery Task** configuration window described below.

» After you configure all your settings, proceed to the third step of the wizard to finalize your task creation.

OR

» Right click an existing Discovery task from the list and select **Edit**, or double-click the task's entry. If the task is Active, the Runtime Result window is displayed, displaying the status of the running task.

If the task is Inactive, the Discovery Task window is displayed.

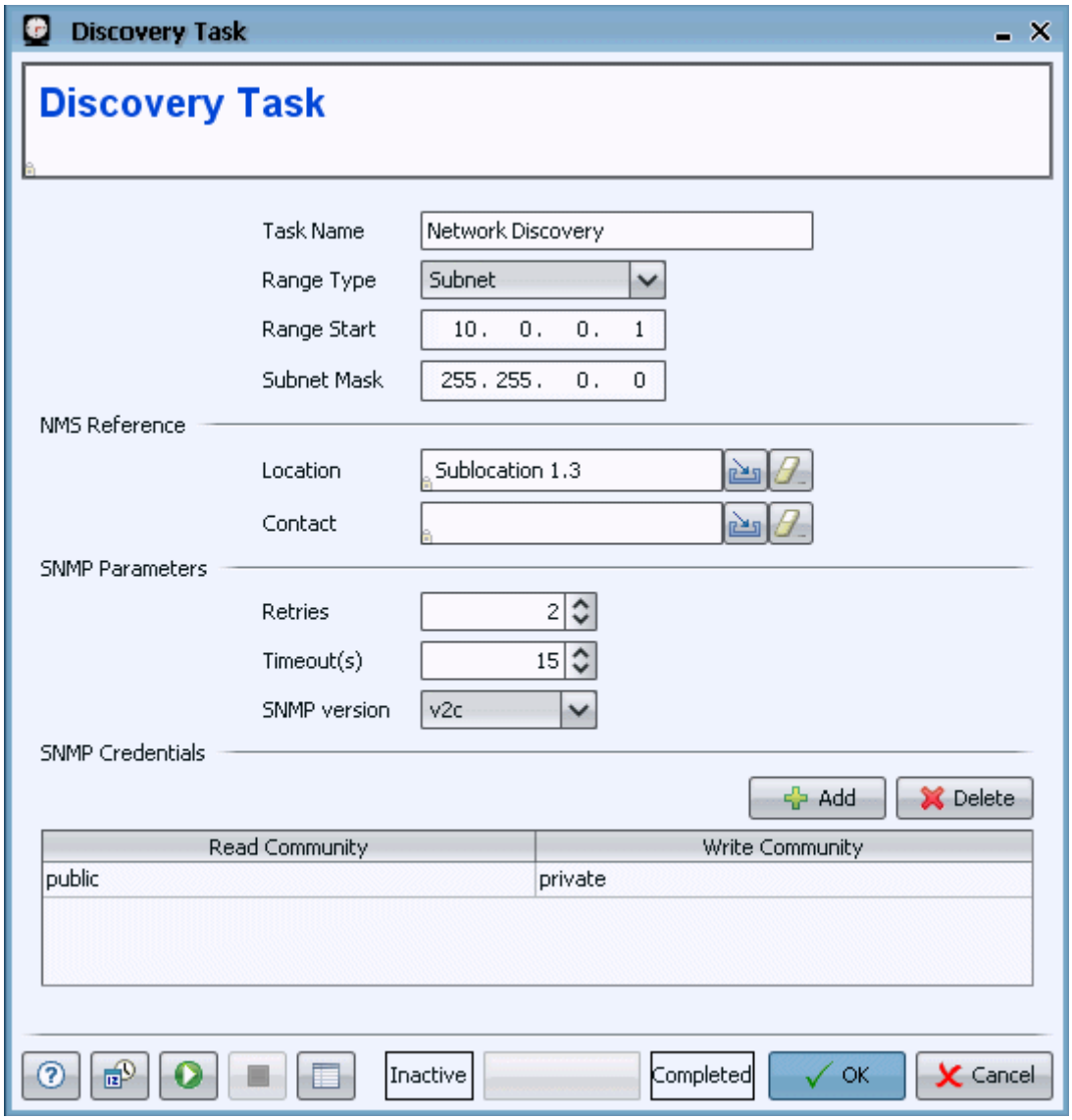


Figure 5-7: Discovery Task Window

The Discovery Task window comprises the following fields:

Parameter	Description
Task Name	The name of the task. A string of up to 128 printable characters. The name must be unique in the system and cannot include the following characters: /,\,?,<,>,:,*,^,|,"
Range Type	The range type: IP or Subnet.
Range Start	The first IP in the range or the base IP, depending on the selected Range Type.

Parameter	Description
Range End/Subnet Mask	The last IP in the range or the subnet mask, depending on the selected Range Type.
Location	An optional field for defining a location for devices in the range. Select from the available locations. Newly discovered devices will be automatically associated with the defined location. Devices already in the database will not be affected.
Contact	An optional field for defining a contact for devices in the range. Select from the available contacts. Newly discovered devices will be automatically associated with the defined contact. Devices already in the database will not be affected.
Retries	The maximum number of retries for SNMP communication. The range is from 0 to 255.
Timeout(s)	The maximum time in seconds that the requesting process waits for a response before attempting a retransmission (or aborting if the maximum number of retries has been reached). The available range is 1 to 3,600 seconds.
SNMP Version	The SNMP protocol version used by the devices the NMS is attempting to discover. The available options are: ■ v1 ■ v2c ■ v3 For a complete list of all compatible SNMP versions for each device, see Appendix E.

Parameter	Description
SNMP Credentials	Use the Add and Remove buttons to populate the SNMP Credentials. The type of credentials differ, depending on the SNMP version. For SNMP v1 and v2c, fill in the read/write community table: ■ Read Community - SNMP Read community to be used by discovery when accessing devices in the range. If unique communities are not defined, the defined global Read communities will be used one after the other. ■ Write Community - The unique SNMP Write community to be used when accessing discovered devices in the range. If unique communities are not defined, the global Write community paired with the global Read community that was used to discover devices in the range will be used when accessing these devices. For SNMP v3, the following credentials apply: ■ Username - Username used for authentication ■ Security Level - Authentication and privacy settings » NoAuth_NoPriv - Both authentication and privacy are disabled » Auth_NoPriv - Authentication is enabled and privacy is disabled » Auth_Priv - Both authentication and privacy are enabled ■ Authentication Algorithm - Hashing algorithm applied to the authentication password » MD5 - Message-Digest algorithm 5 » SHA - Secure Hash Algorithm ■ Authentication Password - Password used for authentication ■ Privacy Algorithm - Encryption standard used for data transmission » AES - Uses the Advanced Encryption Standard » DES - Uses the Data Encryption Standard Privacy Password - Encryption key used by the privacy algorithm

5.2.7 LDAP Backup/File Aging Task

The LDAP Backup/File Aging task is used to set up the backup frequency for LDAP credentials. LDAP Backup/File Aging tasks are system tasks and can only be modified, not deleted.

To edit the LDAP Backup/File Aging Task:

1. In the Task Manager window, right click the LDAP Backup/File Aging task from the list and select **Edit**. If the task is Active, the Runtime Results window opens, displaying the status of the running task.
2. If the task is Inactive, the Database Aging Task is displayed.

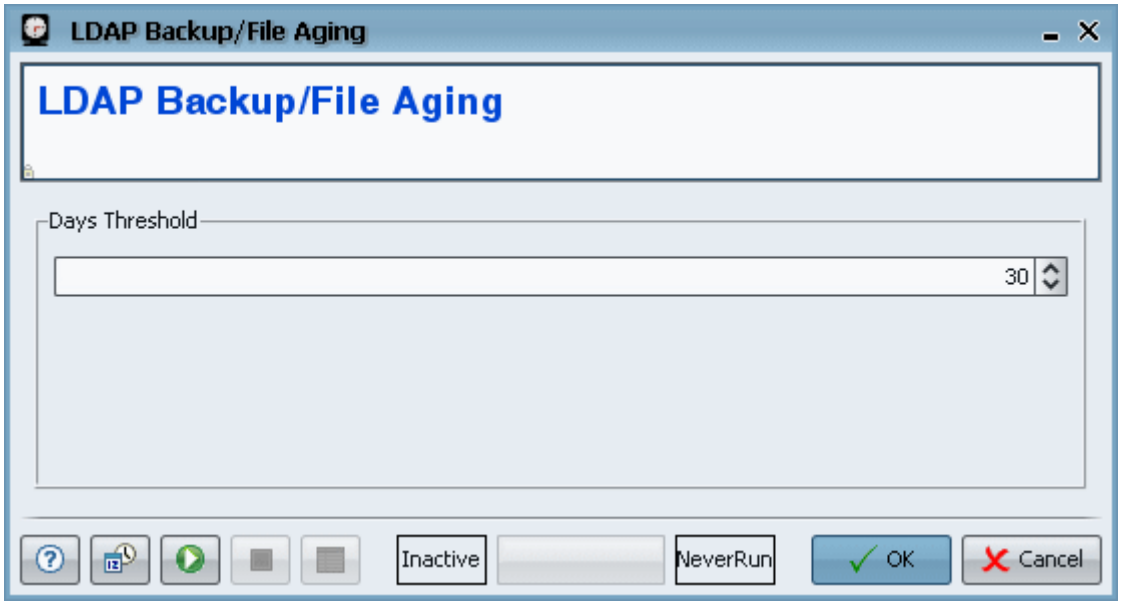


Figure 5-8: The LDAP Backup/File Aging Edit Window

3. Use the Days Threshold field to indicate how often the backup task should be run.

5.3 File Manager

The File Manager allows users to manage different types of files stored in the database such as backup configuration files and performance collection files.

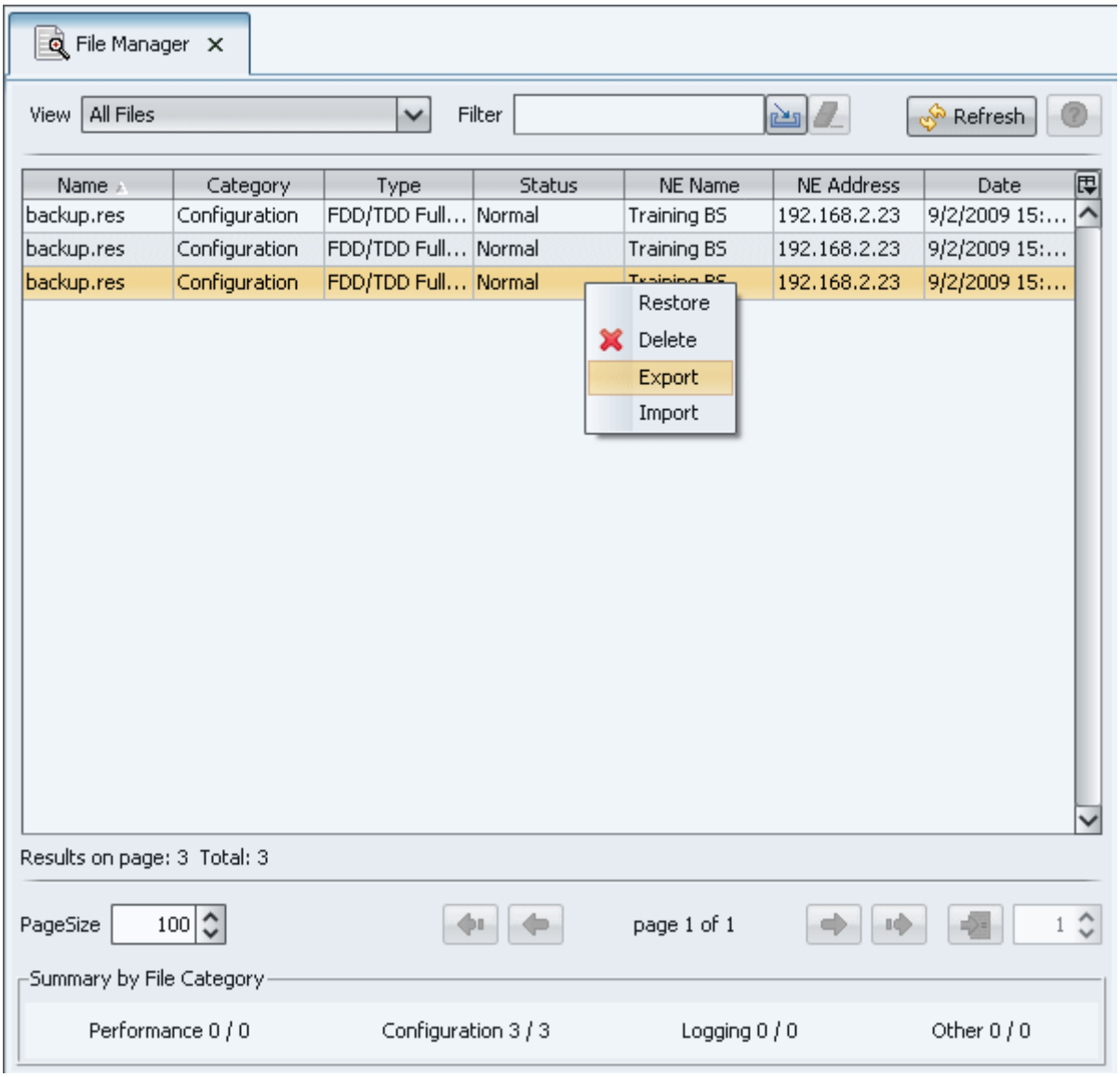


Figure 5-9: File Manager

For detailed information about each type of file that is supported for a particular equipment, check the File Manager related section of the corresponding device driver manual. In general, you can use the right click menu to import, export or delete various files from the client file system. Depending on the file type,

additional options may be available in the context menu, such as initiating a restore configuration task for configuration backup files.

You can display only specific types of files by selecting the corresponding setting from the **View** drop menu at the top of the working area. When doing so, the table header will change so that only the columns that are relevant for that particular file type are shown. If you choose the **All Files** option, an additional summary section will be displayed at the bottom of the Working Area. You can switch between two types of summaries by right clicking on the section and selecting the corresponding option from the context menu:

- **Summary by File Category** - File counts for performance, configuration, logging and other file categories.
- **Summary by File Type** - File counts for various types of files according to the installed Device Drivers.

5.4 Contact Manager

The Contact Manager enables to organize and manage your contacts. Each device can be associated with a contact.

To open the Contact Manager:

1 Select *Administration* > *Contact Manager* from the main menu or the Navigation Pane. The Contact Manager displays a list of available contacts.

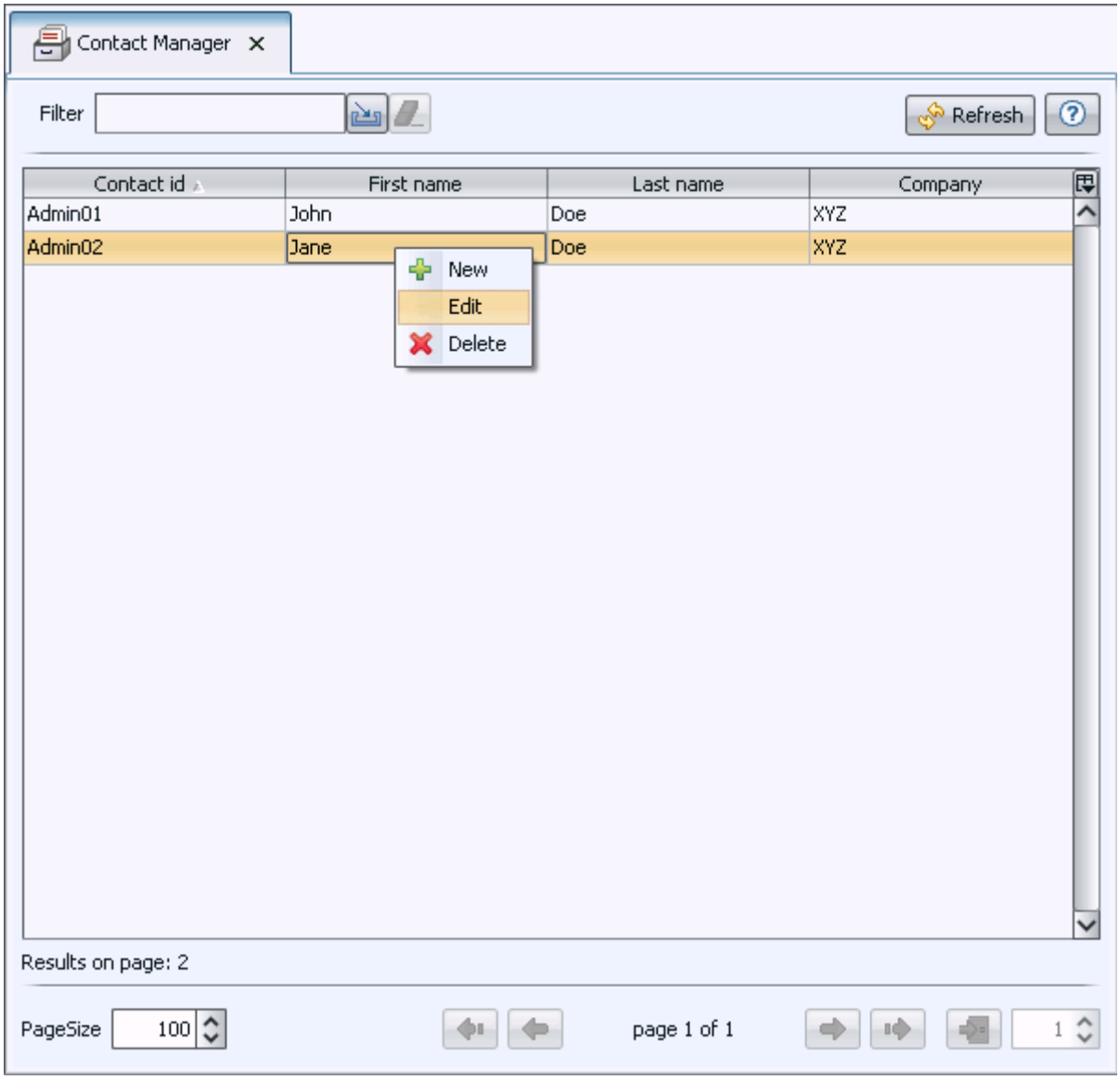


Figure 5-10: Contact Manager

2 Use the following controls in the right click menu of the Contact Manager window:

Button	Description
New	Opens the *Contact Editor* window, enabling to create new contacts.
Edit	Opens the *Contact Editor* window, enabling to modify the selected contact.

Button	Description
Delete	Deletes the selected contact(s) from the Contact Manager window and from the database. Contacts that are associated with equipment cannot be deleted.

5.4.1 Associating Devices with a Contact

To associate devices with a contact:

Open the Equipment Editor of the device. Click the **Browse** button next to the Contact field to open the *Select Contact* window and select a contact.

5.4.2 Creating or Modifying a Contact

To create/modify a contact:

1 From the Contact Manager window, right click and select **New** to create a new contact. To modify an existing Contact, select a contact from the list and click **Edit**, or double-click on the selected contact.

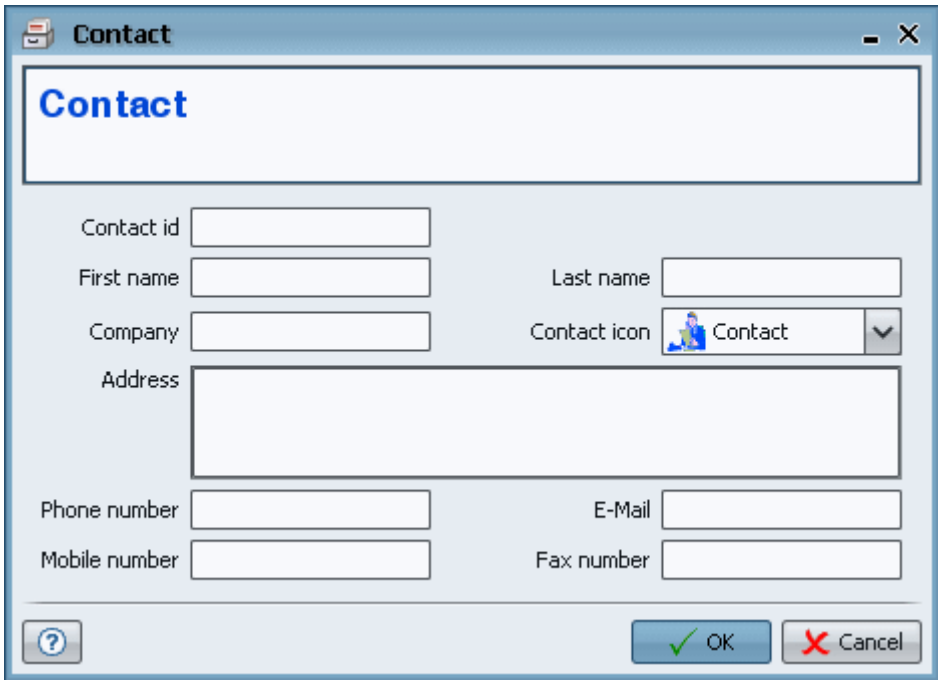


Figure 5-11: The Contact Editor

2 Configure the following parameters:

Parameter	Description
Contact ID	A unique identifier for this contact. Up to 80 printable characters.
First Name	Optional. The contact's first name. Up to 80 printable characters.
Last Name	Optional. The contact's last name. Up to 80 printable characters.
Company	Optional. The contact's company name. Up to 80 printable characters.
Contact Icon	Optional. Select from the drop-down list an icon to represent this contact: Contact/Group.
Address	Optional. The contact's address. Up to 80 printable characters.
Phone Number	Optional. The contact's phone number. Up to 80 printable characters.
Mobile Number	Optional. The contact's mobile number. Up to 80 printable characters.
Email	Optional. The contact's e-mail address. Up to 80 printable characters.
Fax Number	Optional. The contact's fax number. Up to 80 printable characters.

3 Click **OK**, to save and close the contact, or click **Cancel** to close the window without saving the changes.

5.5 License Manager

LOCAL CRAFT NOTE

The License Manager is not applicable to the Local CRAFT Utility.

This section includes:

- "The License Manager" on page 147
- "Adding Licenses" on page 149
- "Activating Existing Licenses" on page 149
- "Rescue License" on page 149
- "Displaying Licensing Information" on page 150

5.5.1 The License Manager

The License Manager displays information about valid licenses for managing different device types, summary details on the currently managed device types, and server information included in the license.

To access the License Manager window:

Select *Administration* > *License Manager* from the main menu or the Navigation Pane.

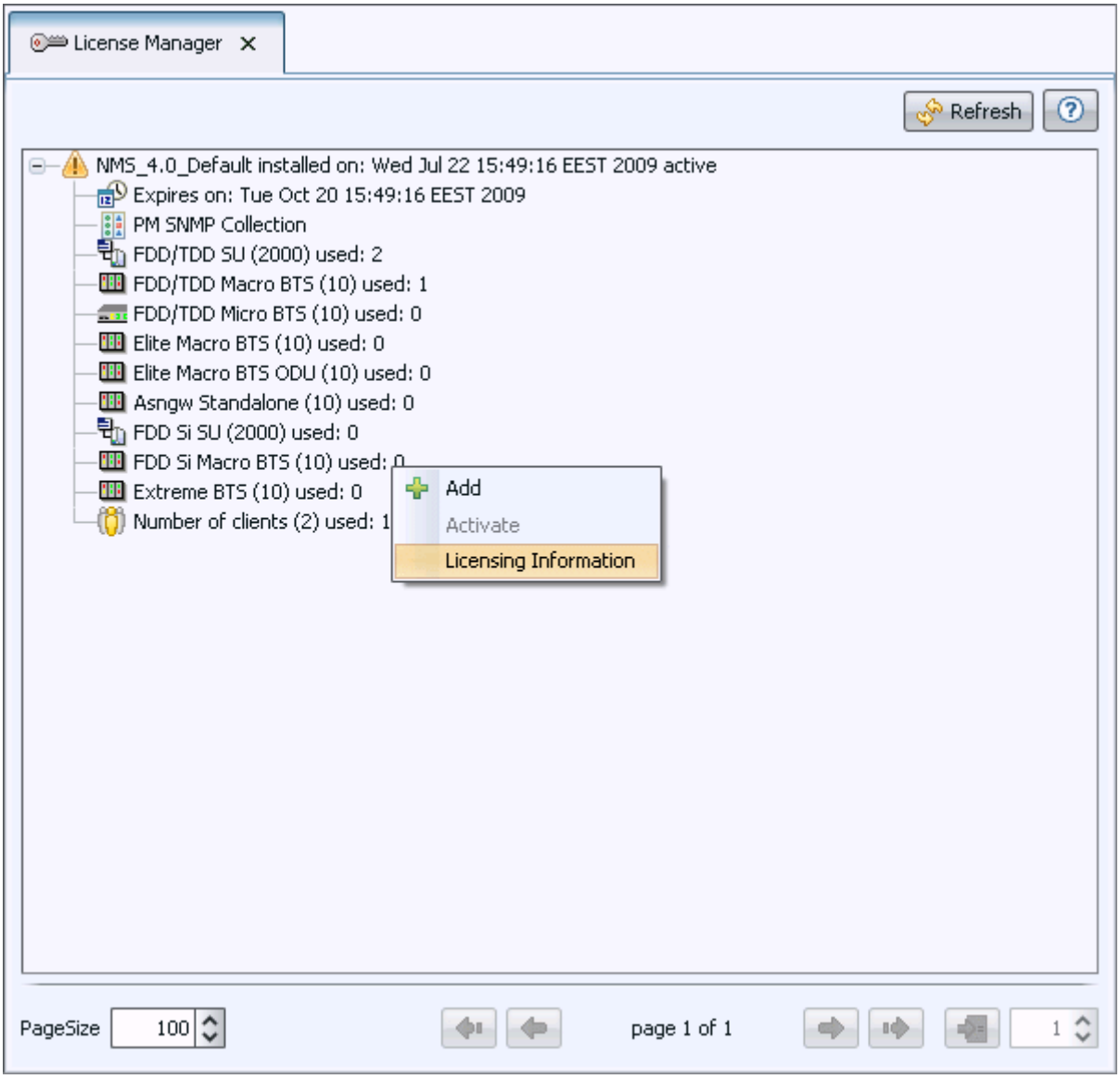

License Manager
Refresh
NMS_4.0_Default installed on: Wed Jul 22 15:49:16 EEST 2009 active
Expires on: Tue Oct 20 15:49:16 EEST 2009
PM SNMP Collection
FDD/TDD SU (2000) used: 2
FDD/TDD Macro BTS (10) used: 1
FDD/TDD Micro BTS (10) used: 0
Elite Macro BTS (10) used: 0
Elite Macro BTS ODU (10) used: 0
Asngw Standalone (10) used: 0
FDD Si SU (2000) used: 0
FDD Si Macro BTS (10) used: 0
Extreme BTS (10) used: 0
Number of clients (2) used: 1
Add
Activate
Licensing Information
PageSize
100
page 1 of 1
1

Figure 5-12: License Manager

The License Manager displays the following information for each licensed device type: <Name> (#) used: #

Parameter	Description
Name	The device type.
(#)	The number of licensed devices of the applicable type.
used: #	The number of managed devices. The number increases whenever a new device is discovered.

When the number of discovered devices (Managed Devices) reaches the number of Licensed Devices, additional discovered devices will be ignored.

Unlicensed devices will be marked in Equipment Manager with an exclamation icon.

When considering future expansion plans, the number of licensed devices compared with the number of managed devices of each type, will indicate whether there is a need for an updated license.

5.5.2 Adding Licenses

Before adding a license, make sure that the file obtained from the supplier is available.

To add licenses:

From the right click menu, select **Add** and browse to the location of the license file. Select the file and click **Open**. The new licenses are displayed on the list. Alternatively, save the license file in the */<Management_System>/file system/license* folder. The next time the server will be restarted, the new license will also be added.

5.5.3 Activating Existing Licenses

The new license added to the system needs to be activated in order to enable the system to manage the required devices.

To activate a license:

Right click the required license and select **Activate**.

NOTE

Activating a license will deactivate all other licenses.

5.5.4 Rescue License

The NMS comes with a default license called Rescue. This license is activated automatically if there is no other license currently active. It allows the user to login and add a new valid license. This prevents the user from being locked out of the application if the current license expires.

5.5.5 Displaying Licensing Information

To display licensing information:

From the right click menu, select **Licensing Information**. The Server Information window is displayed showing the Server IP and MAC Addresses.

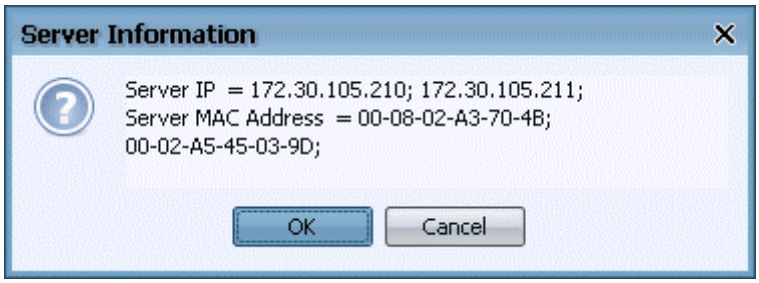
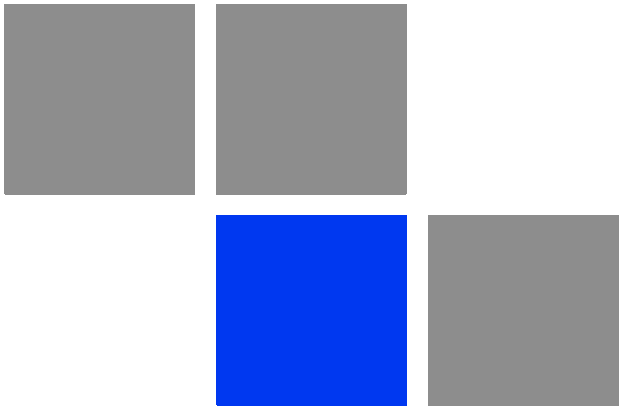


Figure 5-13: Server Information Window



Chapter 6

Security Management

In This Chapter:

- "Overview" on page 153
- "Audit Log Manager" on page 154
- "User Manager" on page 160
- "User Profile Manager" on page 168
- "User Session Monitor" on page 176 - not applicable to the Local CRAFT Utility
- "Password Policy" on page 179
- "External Entities Mapping" on page 182
- "User Domain Manager" on page 185

6.1 Overview

In the Security Management menu you can define and manage user permissions and access rights for users of the management system. The access level you assign to users determines the management functions that the user can access. The menu provides access to the following windows:

- *Audit Log Manager* - Enables to view recorded events and export the logged data to an external Comma Separated Value (CSV) file. Refer to Section 6.2.
- *User Manager* - Enables to create and manage users, and associate information with each user. Refer to Section 6.3.
- *User Profile Manager* - Enables to create and manage user profiles, which contain the default access right definitions for all users assigned to that user group. Refer to Section 6.4.
- *User Session Monitor* (not applicable to the Local CRAFT Utility) - Enables to display information on the currently logged in users and to send messages to a logged in user. Refer to Section 6.5.
- Password Policy - Enables to set policies for user passwords. These policies govern the security measures applied to user's attempts to log in.

NOTE

All security changes will be visible to the user only after logging out and logging back into the system.

6.2 Audit Log Manager

The management system provides a logging service that records messages to the database upon the occurrence of pre-specified events. These messages can include event date and time, event type, error messages and other important information according to the recorded event. The Audit Log Manager enables to view recorded events and export the logged data to an external Comma Separated Value (CSV) file.

To open the Audit Log Manager:

Select *Security Management* > *Audit Logs* from the main menu or the Navigation Pane. The Audit Log Manager displays a list of all logged records.

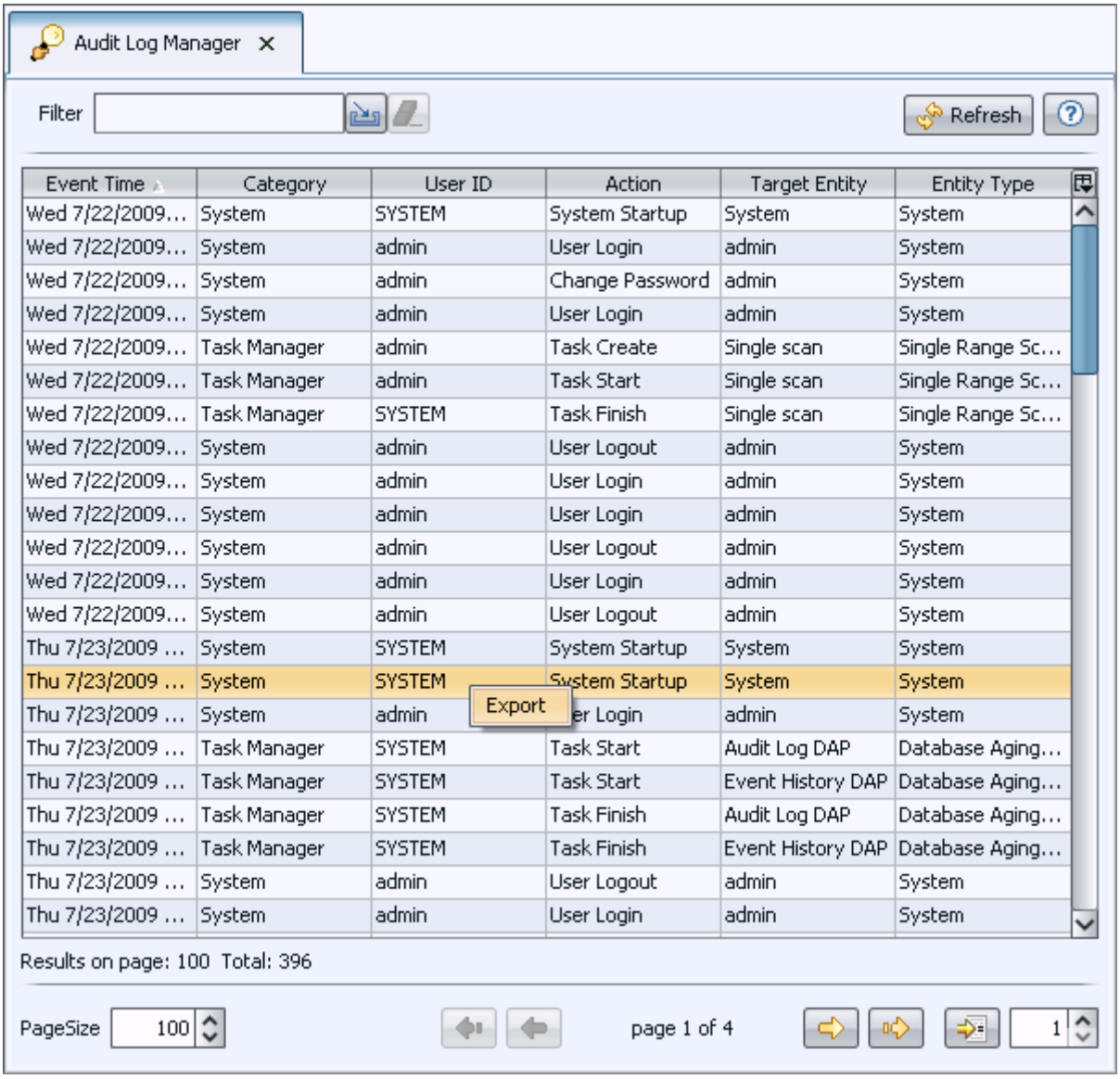

Audit Log Manager
Filter
Refresh
Event Time
Category
User ID
Action
Target Entity
Entity Type
Wed 7/22/2009... System SYSTEM System Startup System System
Wed 7/22/2009... System admin User Login admin System
Wed 7/22/2009... System admin Change Password admin System
Wed 7/22/2009... System admin User Login admin System
Wed 7/22/2009... Task Manager admin Task Create Single scan Single Range Sc...
Wed 7/22/2009... Task Manager admin Task Start Single scan Single Range Sc...
Wed 7/22/2009... Task Manager SYSTEM Task Finish Single scan Single Range Sc...
Wed 7/22/2009... System admin User Logout admin System
Wed 7/22/2009... System admin User Login admin System
Wed 7/22/2009... System admin User Login admin System
Wed 7/22/2009... System admin User Logout admin System
Wed 7/22/2009... System admin User Login admin System
Wed 7/22/2009... System admin User Logout admin System
Thu 7/23/2009 ... System SYSTEM System Startup System System
Thu 7/23/2009 ... System SYSTEM System Startup System System
Export
Thu 7/23/2009 ... System admin er Login admin System
Thu 7/23/2009 ... Task Manager SYSTEM Task Start Audit Log DAP Database Aging...
Thu 7/23/2009 ... Task Manager SYSTEM Task Start Event History DAP Database Aging...
Thu 7/23/2009 ... Task Manager SYSTEM Task Finish Audit Log DAP Database Aging...
Thu 7/23/2009 ... Task Manager SYSTEM Task Finish Event History DAP Database Aging...
Thu 7/23/2009 ... System admin User Logout admin System
Thu 7/23/2009 ... System admin User Login admin System
Results on page: 100 Total: 396
PageSize 100
page 1 of 4
1

Figure 6-1: Audit Log Manager

For each audit record, the following information is displayed:

- Event Time - The date and time of the event

- Category - The category of the event:
  - Equipment Manager
  - Event Filter Manager
  - Event Template Manager
  - Licence
  - NBI Manager
  - NBI Policy Manager
  - Script Command Manager
  - Security
  - System
  - Task Manager
  - User Manager
  - User Profile Manager
- User ID - The user who initiated the action. System User ID indicates a system initiated action.

- The action performed:
  - Change Password
  - Entity Change
  - Entity Create
  - Entity Delete
  - Equipment Create
  - Equipment Delete
  - Licence Activated
  - License Expired
  - License Imported
  - System Shutdown
  - System Startup
  - Task Abort
  - Task Create
  - Task Delete
  - Task Finish
  - Task Start
  - Task Schedule
  - Task Unschedule
  - Task Update
  - User Login
  - User Logout

- Target Entity - The element which is the target of an action, (for example: the "entity delete" action that for which the target is a user named "aa"):
  - Event History DAP
  - User of any type
  - Audit Log DAP
  - Task Names
  - License Names
  - Filter Names
  - Device Names

- Entity Type - The entity associated with the event.
  - Database Aging Task
  - Event Filter
  - Event Template
  - License
  - NBI
  - NBI Policy
  - Network Discovery Task
  - Performance Collection Task
  - Script Command
  - Security
  - Range Discovery Task
  - System
  - User
  - User Profile
  - Additional entities according to the installed Device Driver(s)

To export the information of selected audit records:

Right click the desired entry and select **Export**. In the window that opens, browse to the desired location, enter a file name and type, and click **Save**.

6.3 User Manager

The User Manager enables to create and manage users, and associate information to them such as passwords, profile membership and contact information. You can filter the display to show a select subset of users.

6.3.1 The User Manager Window

The User Manager displays the User Name, Display name, and status (Active or Suspended, Password Expired and Activation Waiting) for each user.

To access the User Manager window:

Select *Security Management* > *User Manager.* The User Manager window is displayed.

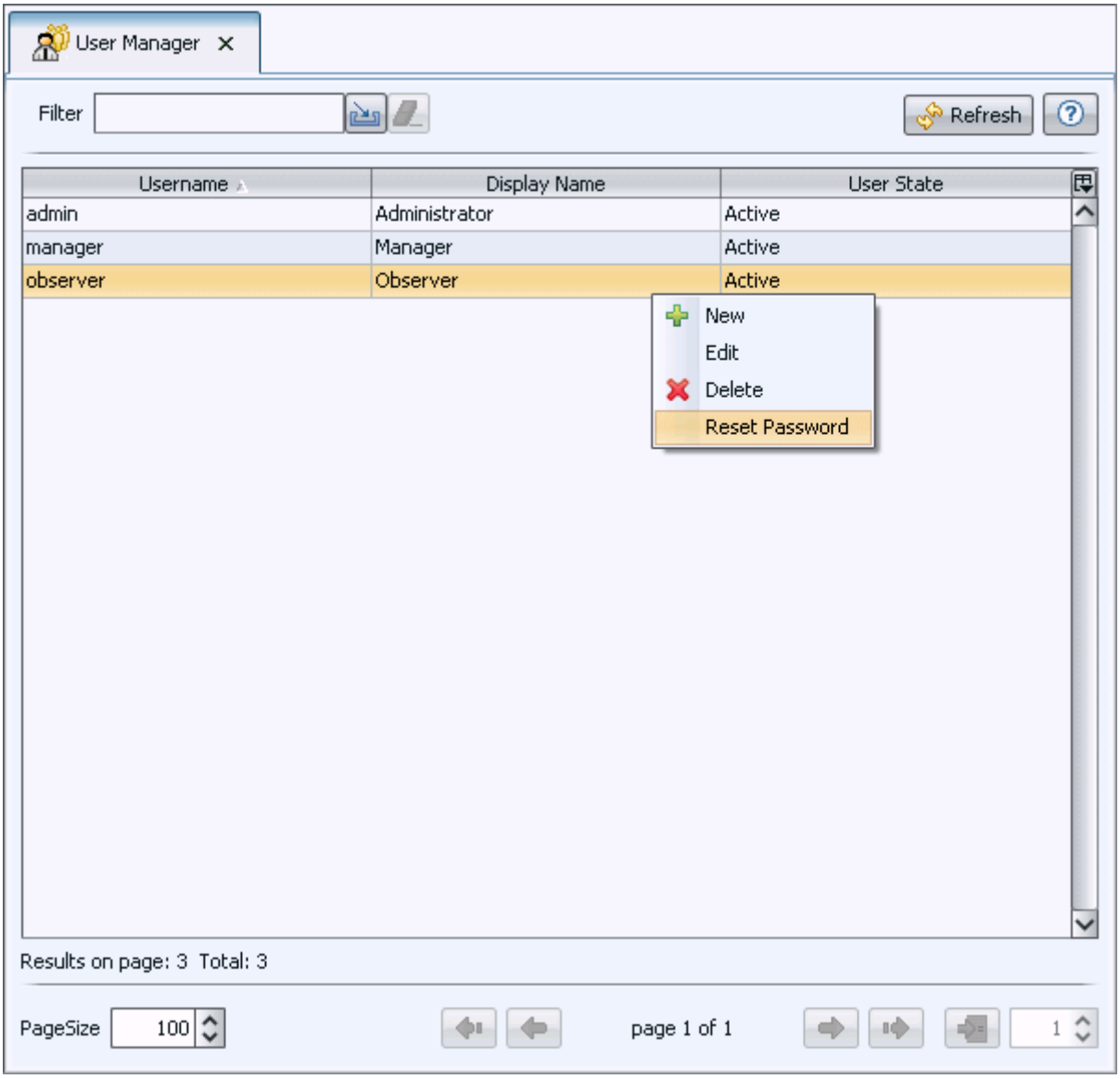


Figure 6-2: User Manager

To reset a user's password:

1 Right click a user entry from the list.

2 From the context menu, select **Reset Password**. The Reset Password window is displayed.

Figure 6-3: Reset Password Window

3 Enter and confirm the new password.

6.3.2 Adding or Modifying a User

You can add new users or edit existing ones by modifying their properties.

You can set the User Profiles to associate with a user (see Section 6.4 for information about how to create the profiles). As you grant permissions to defined profiles, you can grant or deny users access to certain functions based on their profile associations.

To create a new user:

1 From the right click menu, select **New** to display the User Editor.

2 Enter the appropriate information for the *General* section. Most of the information associated with a user is optional. However, the Username entries required.

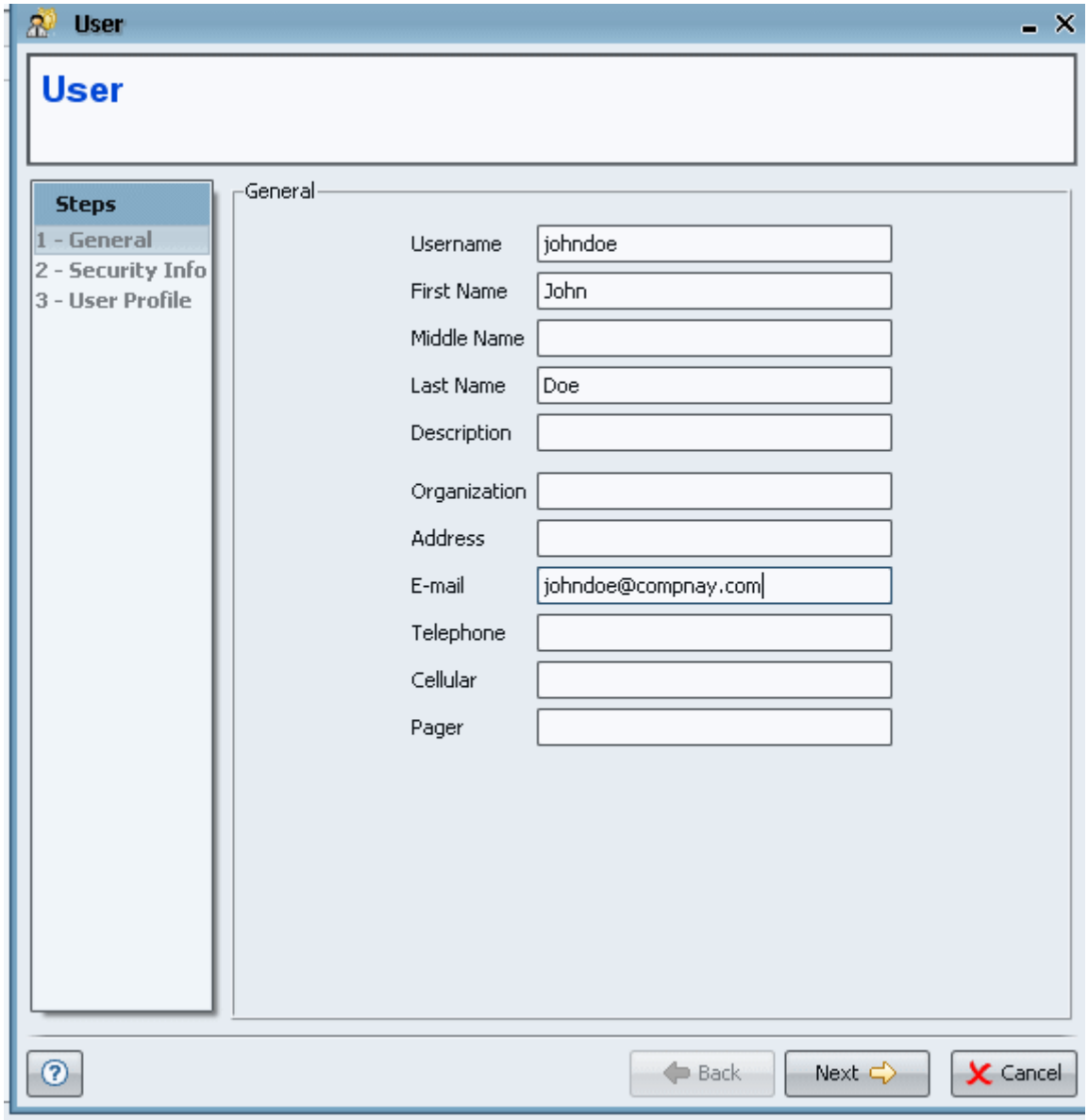


Figure 6-4: User Editor - General

NOTE

The Username must be unique; if it matches an existing Username, the application generates an error. The Username you enter here is displayed in the User Manager window and in all relevant reports.

3 Click **Next** and enter the required information for the *Security Info* section:

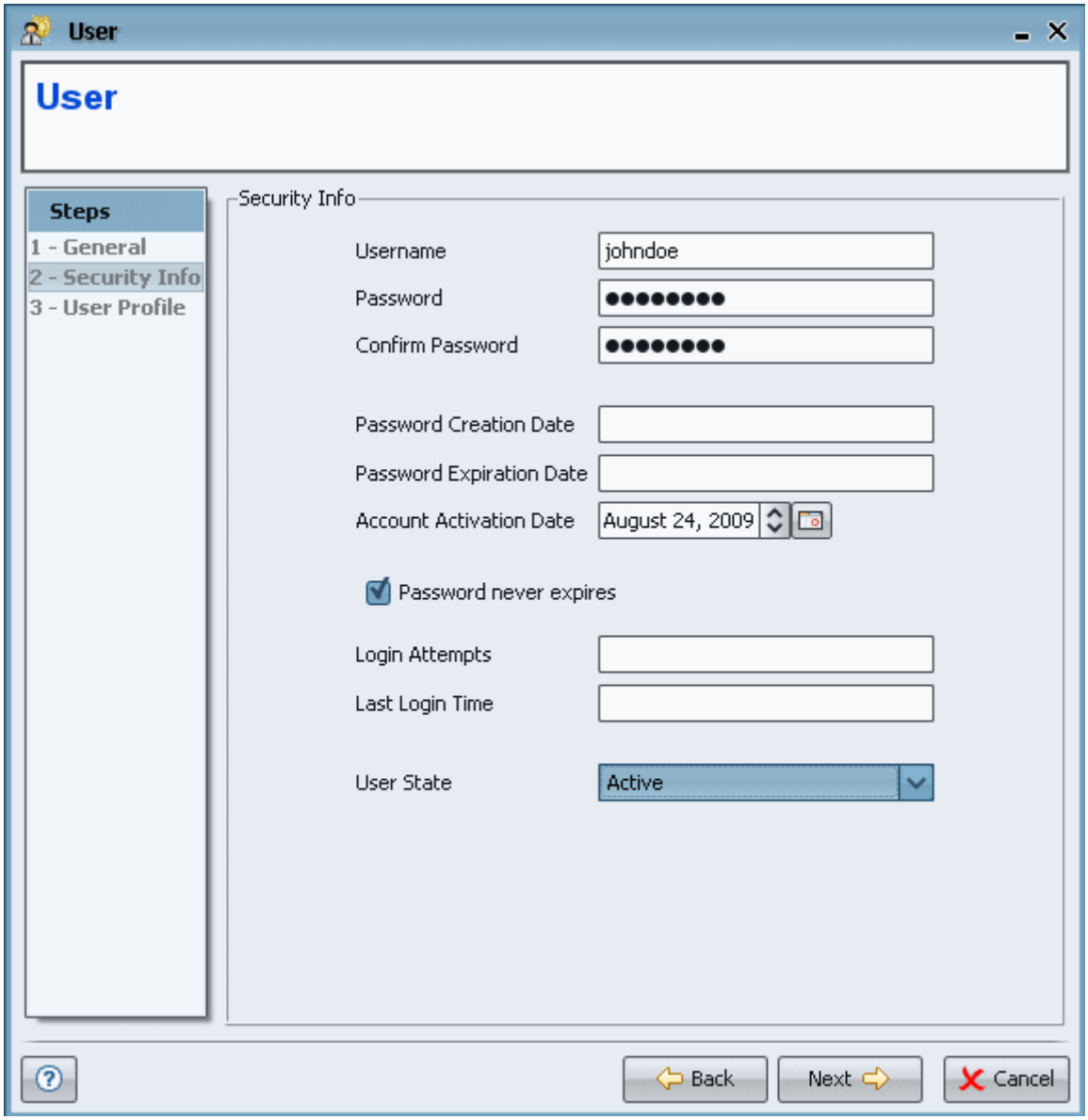


Figure 6-5: User - Security Info

Parameter	Description
User Name	Read-only. Taken from the previous dialog box.
Password	Password is mandatory. The password must adhere to the Password Policy.
Confirm Password	Re-enter the password.
Password Creation Date	Date you created the password. The date is added automatically. The countdown for the password expiration age begins from this date.

Parameter	Description
Password Expiration Date	Specify a date when the password will expire. The default is three months.
Account Activation Date	The date when this account becomes effective. This field lets you create accounts in advance. The accounts remain with Activation Waiting status until the first login of the user after the Effective Date. Specify an Effective Date by entering the date directly in the text field, in the proper format (by default: month/day/year). You can also click the **Calendar** button and select a date from the calendar graphic display.
Password Never Expires	When selected, the user's password will not expire, regardless of the password policy.
Login Attempts	Number of attempts to login until the system is locked
Last Login Time	Time that the user last logged in
User State	Active or Activation Waiting

4 Click **Next** and set the user profile in the *User Profile* section. Use the controls in this section to assign profiles to or remove assignments from the current user:

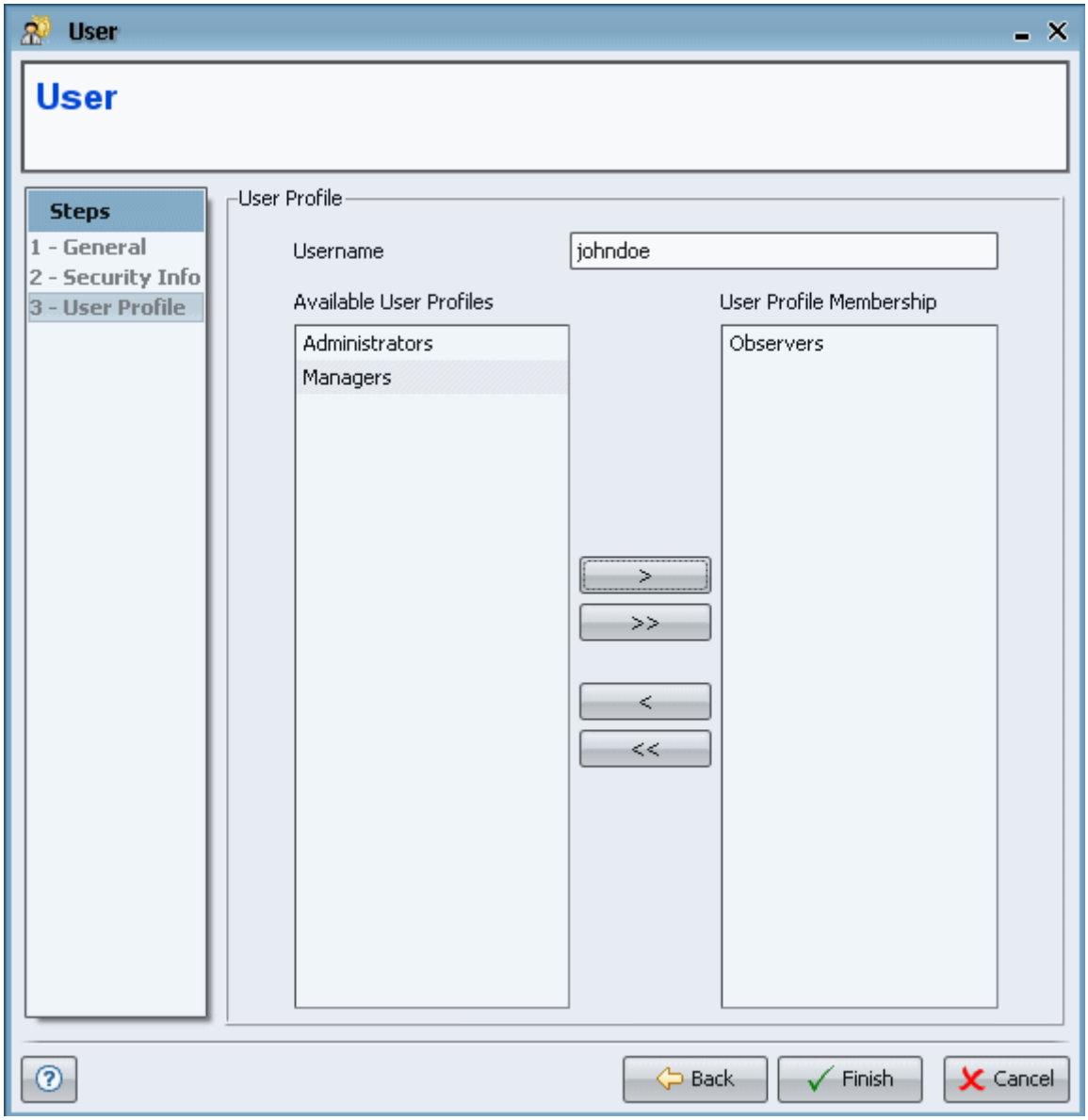


Figure 6-6: User - User Profile

To	Do This:
Assign or remove one profile to the user	1 Select a profile from the left pane (*Available User Profiles*) 2 Click the right-arrow (>) button to move the profile into the right pane (Profile Membership), or left-arrow (<) to remove.
Assign or remove multiple profiles	1 Ctrl+click to select multiple items or click on one item and Shift-click on another to select a range of consecutive items 2 Click the right-arrow (>) or left-arrow (<).

To	Do This:
Assign or remove all profiles to the user	Click the double-right-arrow (>>) or double-left-arrow (<<) button

Click **Finish**. The new user is added to the list.

To edit an existing user entry:

1. Right-click an entry from the list and select Edit. A three-tab User Editor appears, open to the General tab.
2. Modify the information as required in the *General*, *Security Info* and *User Profile* tabs. For more information, see the steps in “To create a new user:” .
3. Click **OK** to apply the changes.
4. Click **Delete** to remove the entry.

In addition to these entries, you may want to associate the user with a Profile. This confers a predetermined set of permissions to the user. See Section 6.4 for more information.

6.4 User Profile Manager

The User Profile Manager lets you create user profiles, edit them or delete profiles. You can associate individual users with profiles and grant permissions to users based on their association with a profile.

Only profiles that have no users can be deleted. Default profiles and users cannot be deleted or modified.

By default, several user profiles with one user defined in each profile are provided when you install your application. The following are the defaults:

- Administrators (admin)
- Observers
- Managers

To access the User Profile Manager

Select *Security Management* > *User Profile Manager* from the main menu or the Navigation Pane. The User Manager window is displayed, showing the profile names and how many users share those profiles.

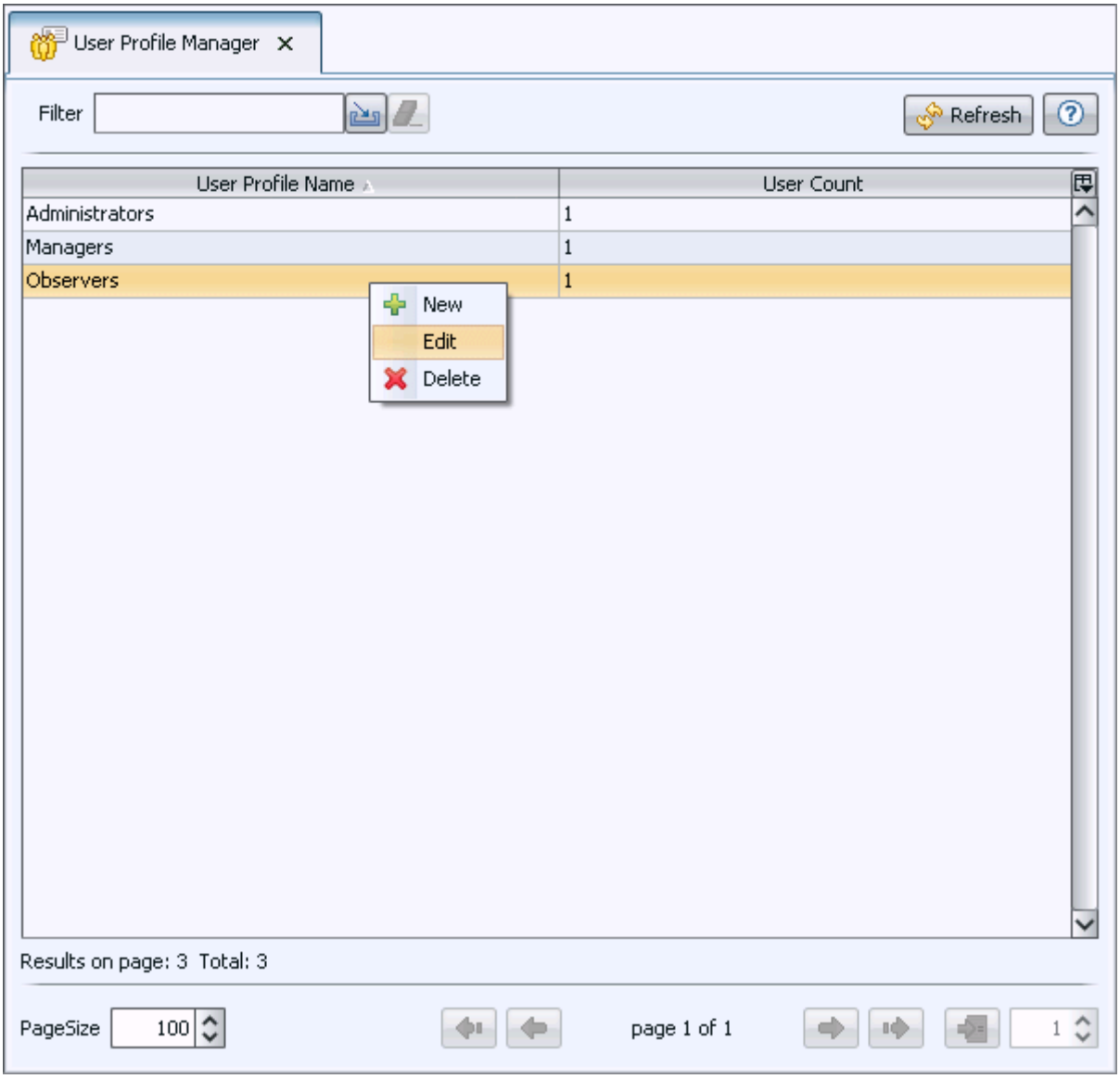


Figure 6-7: User Profile Manager

To add a new profile:

1 In the User Profile Manager, right click and select **New**.A User Profile editor window is displayed.

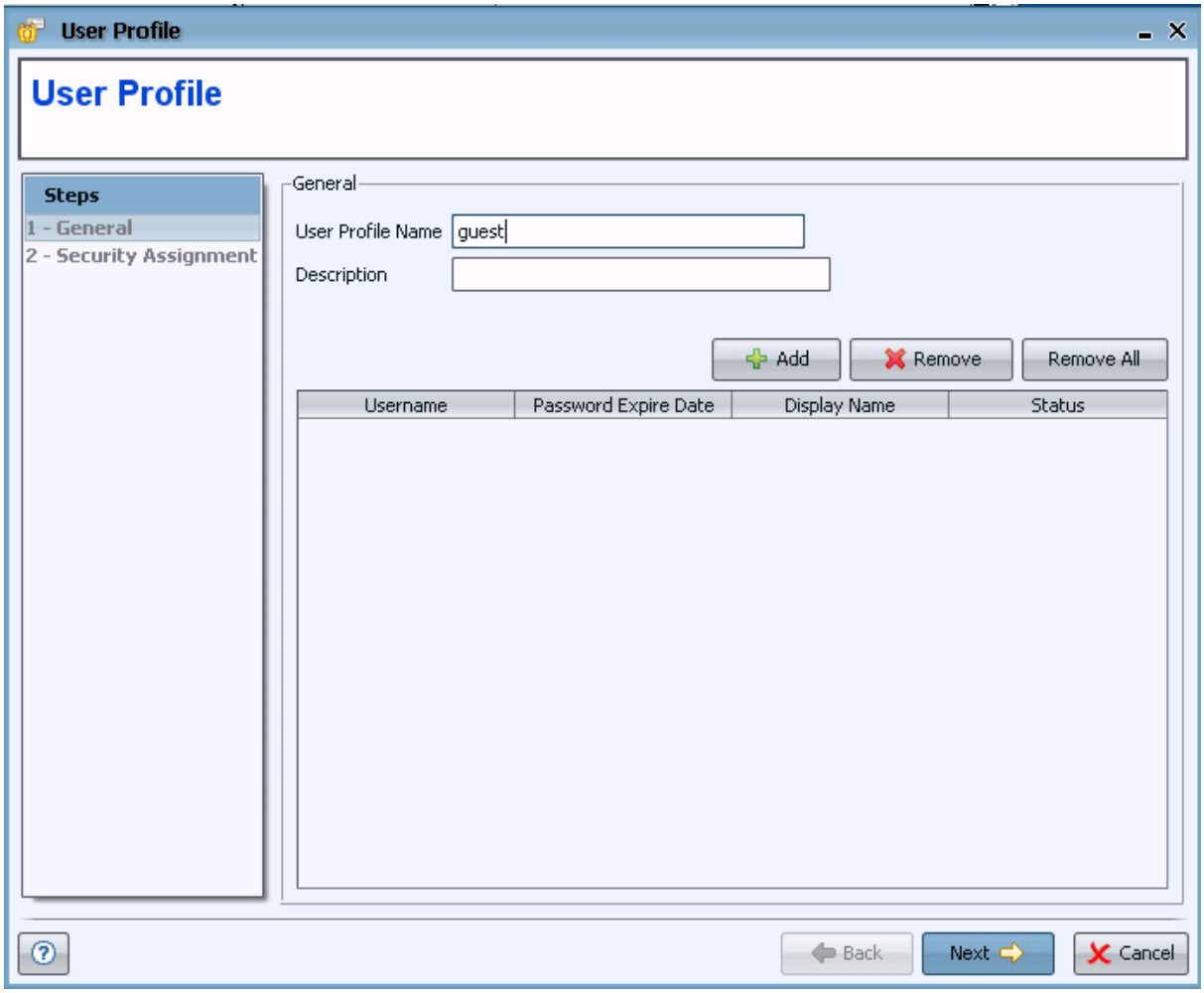


Figure 6-8: User Profile Editor

2 Enter a unique name for the new profile and optionally add a description.

3 If you want to assign that new profile to existing user(s), click **Add**; The User Selector window is displayed. Select the user(s) to which to assign the profile and click **Select**.

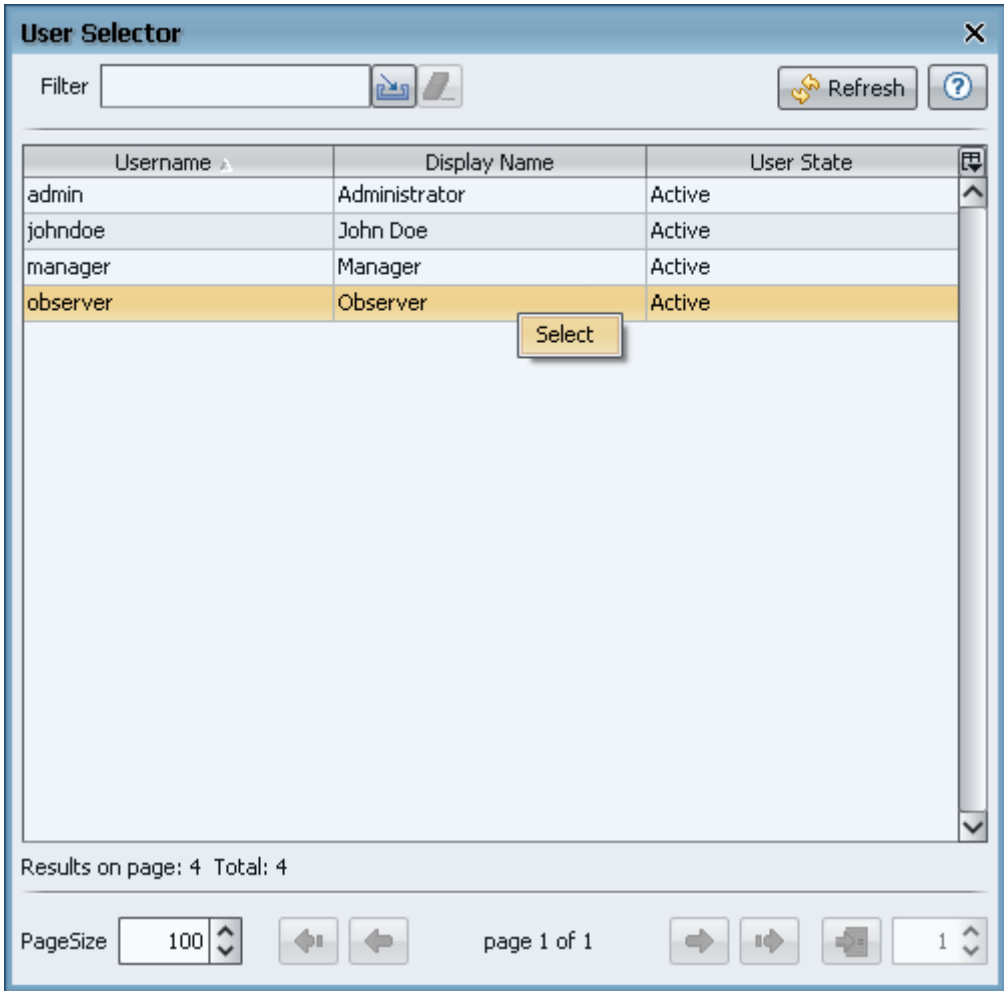


Figure 6-9: User Selector

4 Click **Next;** The Security Assignment window is displayed.

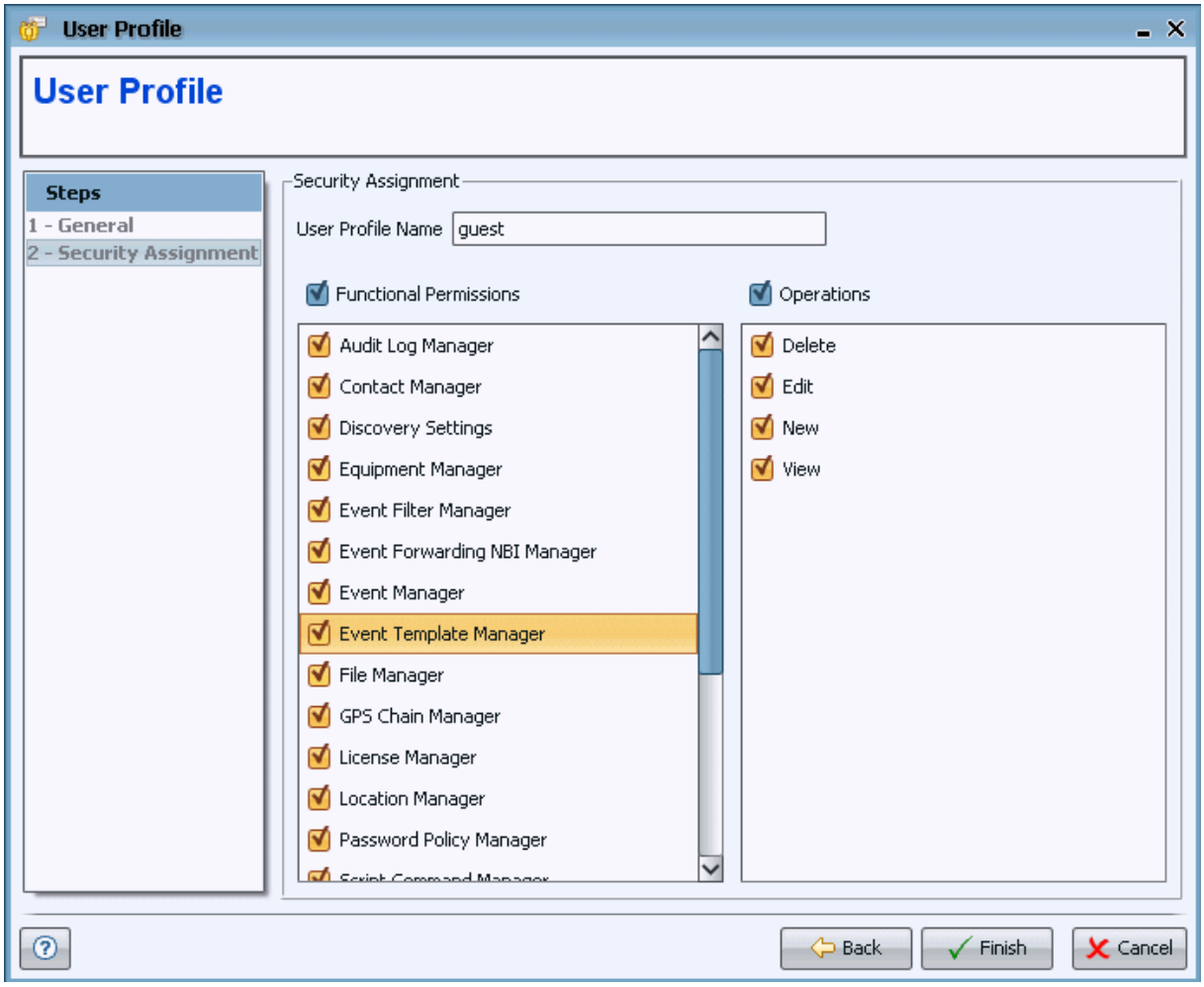


Figure 6-10: User Profile - Security Assignment

5 Grant permissions to the profile by selecting a predefined function check-box and then possible operations (edit, delete, configure, and so on) that each profile or user can perform when exercising the function. To select all, check the Functional Permissions and/or Operations check-boxes.

6 Click **Finish** to save your settings.

To modify an existing profile:

Right click the profile in the Profile Manager, and select **Edit**; An editor window is displayed, with two tabs.

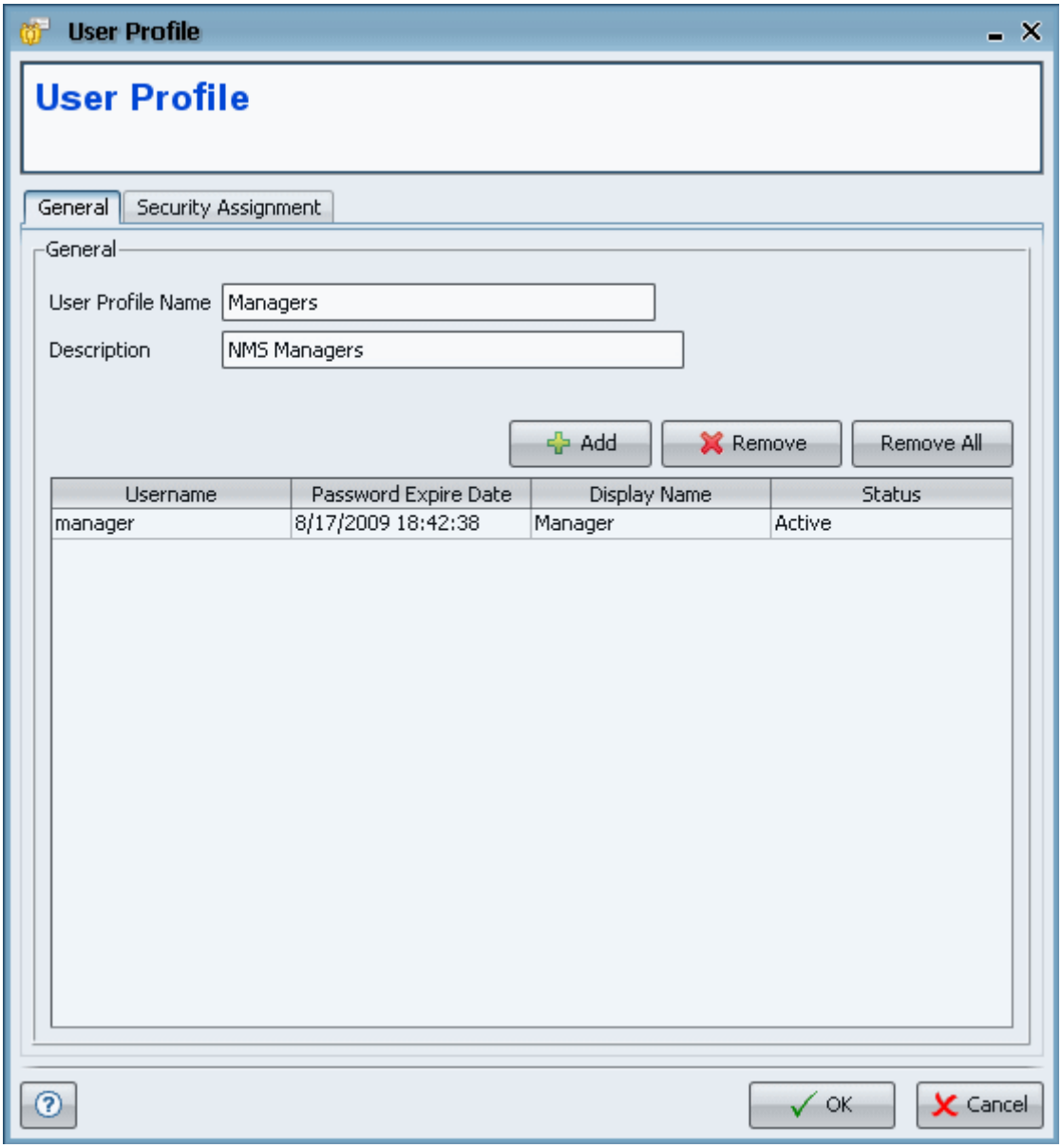


Figure 6-11: User Profile Editor - General Tab

7 In the *General* tab, enter or modify the description of the profile. The name is read-only.

8 If you want to assign that profile to existing user(s), click **Add**; The User Selector window is displayed. Select the user(s) to which to assign the profile and click **Select**. To remove users from the profile click **Remove** or **Remove All**.

9 In the *Security Assignment* tab, set the permissions to the profile: Grant permissions by selecting a predefined function and then possible operations

(delete, edit, configure, and so on) that each profile or user can perform when exercising the function. To select all, check the Functional Permissions and/or Operations check-boxes.

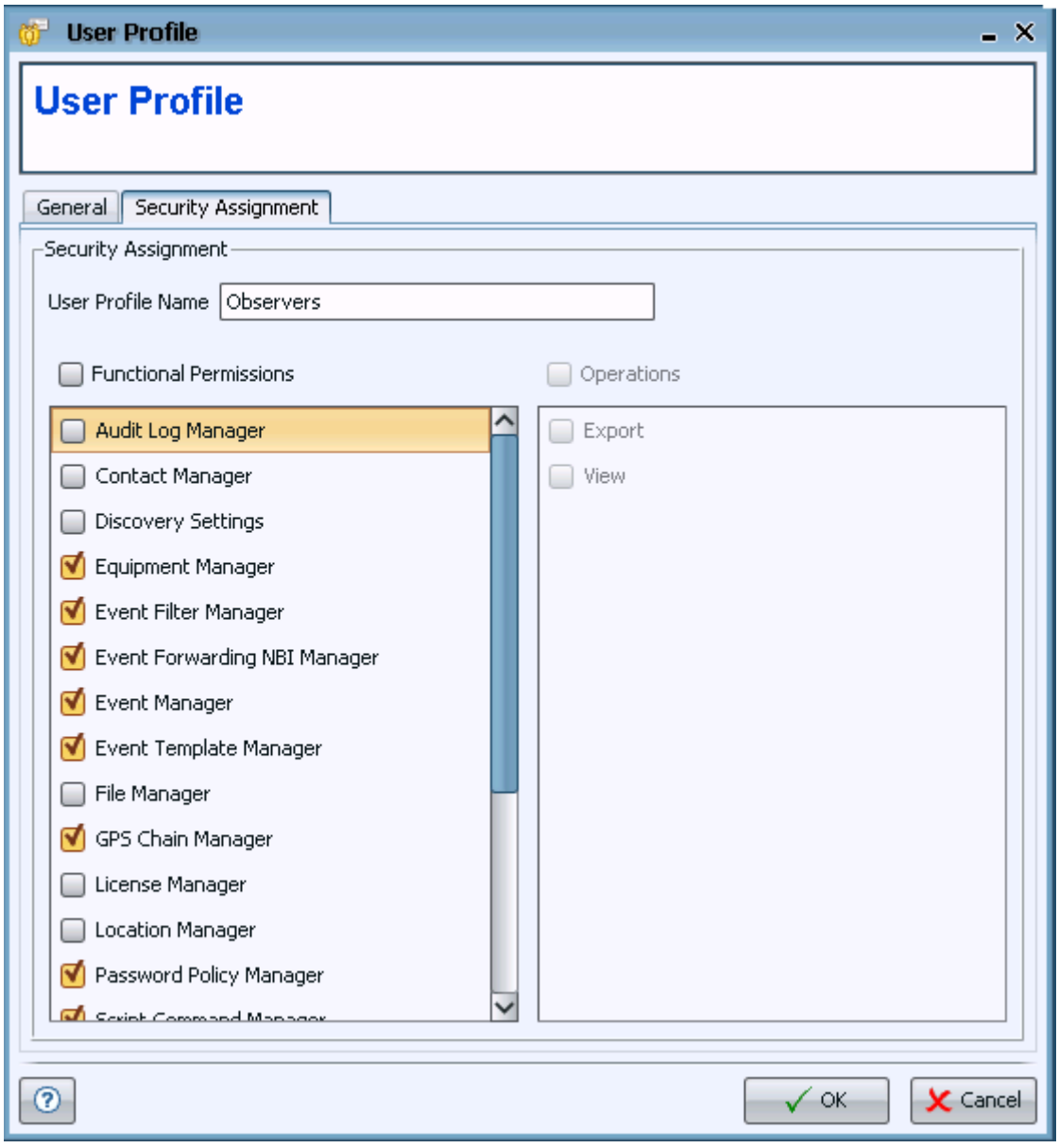


Figure 6-12: User Profile Editor - Security Assignment Tab

10 Click **OK** to save your settings.

To delete a profile:

Right click the profile to remove and select **Delete**. Default profiles cannot be deleted.

6.5 User Session Monitor

LOCAL CRAFT NOTE

The User Session Monitor is not applicable to the Local CRAFT Utility.

The User Session Monitor window displays information on the currently logged in users and enables sending messages to a logged in user. Users with Administrator rights can terminate the application of other users.

To open the User Monitor:

1 Select *Security Management* > *User Session Monitor* from main menu or the Navigation Pane. The User Session Monitor displays a list the *Current Logged In Users* with the User Name, IP addresses with correlation to server and client IPs, and login time for each of the currently logged in users.

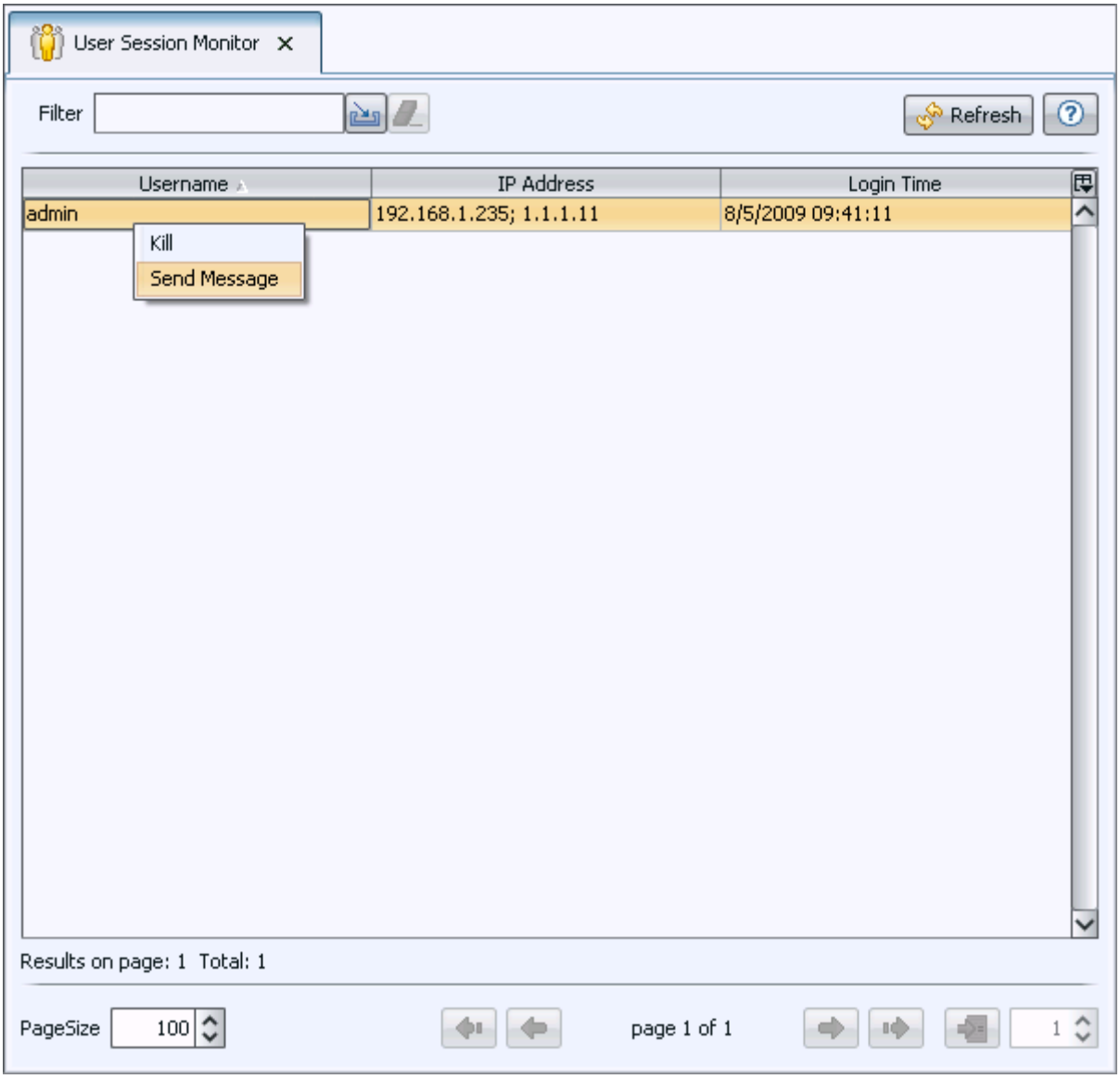


Figure 6-13: User Session Monitor Window

2 Use the following options available in the User Session Monitor right click menu:

Button	Description
Send Message	Select after right clicking one of the logged in users to open the Sending Message window, enabling you to send a text message to the selected user.

Button	Description
Kill	Select to terminate the application of the selected user(s). Only an Administrator can perform this operation to terminate applications of users with lower permission levels.

6.6 Password Policy

The Password Policy editor enables to set policies for user passwords, such as required length, required characters, expiration policy.

To open the Password Policy Editor:

Select *Security Management* > *Password Policy* from the main menu. The Password Policy Editor opens.

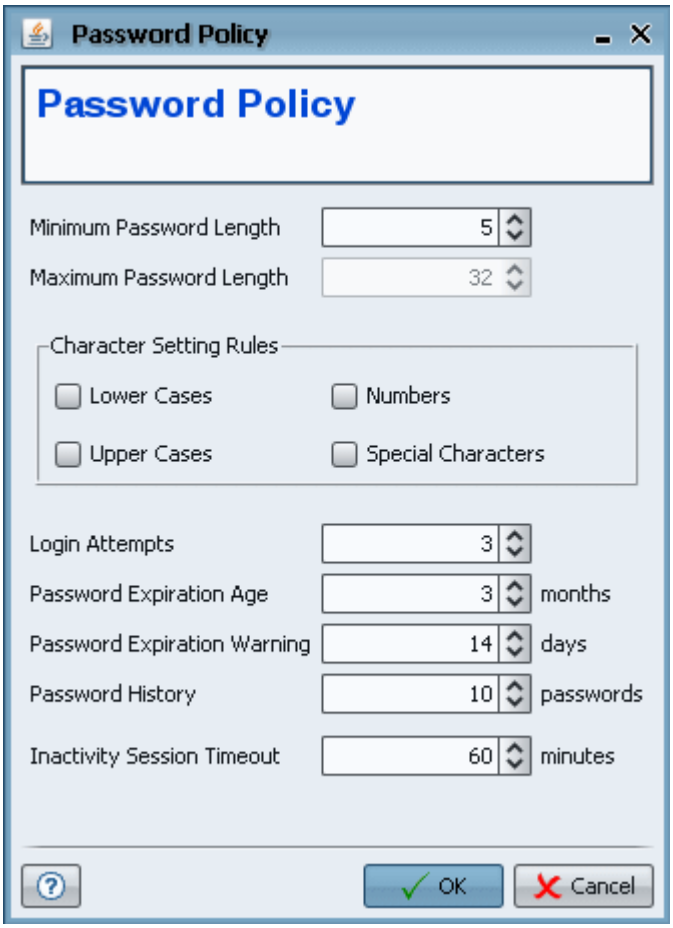


Figure 6-14: Password Policy Editor

The Password Policy Editor includes the following parameters:

Parameter	Description
Minimum Password Length	Sets the minimum length of accepted passwords. Any password with less than the set minimum will be rejected. Value range: 1 - 32.
Maximum Password Length	The maximum length allowed for a password. The maximum length is pre-set to 32 characters and cannot be changed.
Character Setting Rules	
Lower Cases	When checked, a new password will be required to include at least one lower case character.
Upper Cases	When checked, a new password will be required to include at least one upper case character.
Numbers	When checked, a new password will be required to include at least one digit.
Special Characters	When checked, a new password will be required to include at least one special character, e.g. <, >, /, *, &, ^, $, #, !.
Login and Expiration	
Login Attempts	The number of allowed erroneous login attempts before the application is closed and the user is blocked. This parameter can be configured for a selected user from the User Manager. In case of contradiction, the parameter set in the User Manager overrides the general policy for the specific user. Value range: 3 - 20
Password Expiration Age	The time in months before the user is required to change the password. This parameter can be configured for a selected user from the User Manager. In case of contradiction, the parameter set in the User Manager overrides the general policy for the specific user. From the User Manager you can set the password expiration policy for a selected user to never expire. Value range: 1 - 12

Parameter	Description
Password Expiration Warning	The number of days before a user password expires during which a message requiring to change the password is displayed. The message is displayed at every login until the password expiration age is reached. Value range: 1 - 14
Password History	The number of old passwords for the system to keep a record. The user will not be able to repeat a used password if it was used in a cycle within the set range. Value range: 0 - 10
Inactivity Session Timeout Not applicable to the Local CRAFT Utility	The number of minutes with no user activity, after which the user is logged out. The user will be required to log in again to continue working. Value range: 0 - 100

NOTE

All password policy parameters except *Inactivity Session Timeout* do not apply to external users.

6.7 External Entities Mapping

If you are using an LDAP server for user account management, you can map existing LDAP entities to specific user profiles defined in the NMS. For this purpose, you must set up a connection between the NMS server and the external LDAP server. See Appendix C for details on how to do this.

NOTE

The external LDAP connection is disabled by default. If you want to enable it, follow these steps:

1 Go to *<NMS_Installation_Path>\jboss\server\nms\deploy\bwanms.sar\conf*

2 Edit the *appserver.properties* file

3 Look for the *com.bwanms.backend.security.externalLDAPEnabled* entry

4 Change its value from *false* to *true*

5 Restart the NMS server

To open External Entities Mapping:

Select *Security Management* > *External Entities Mapping* from the main menu. The External Entities Mapping window opens.

NOTE

The External Entities Mapping is available only to users with “New” operations enabled for the “User Manager” functional permission. For more information about setting functional permissions, see “User Profile Manager” on page 168.

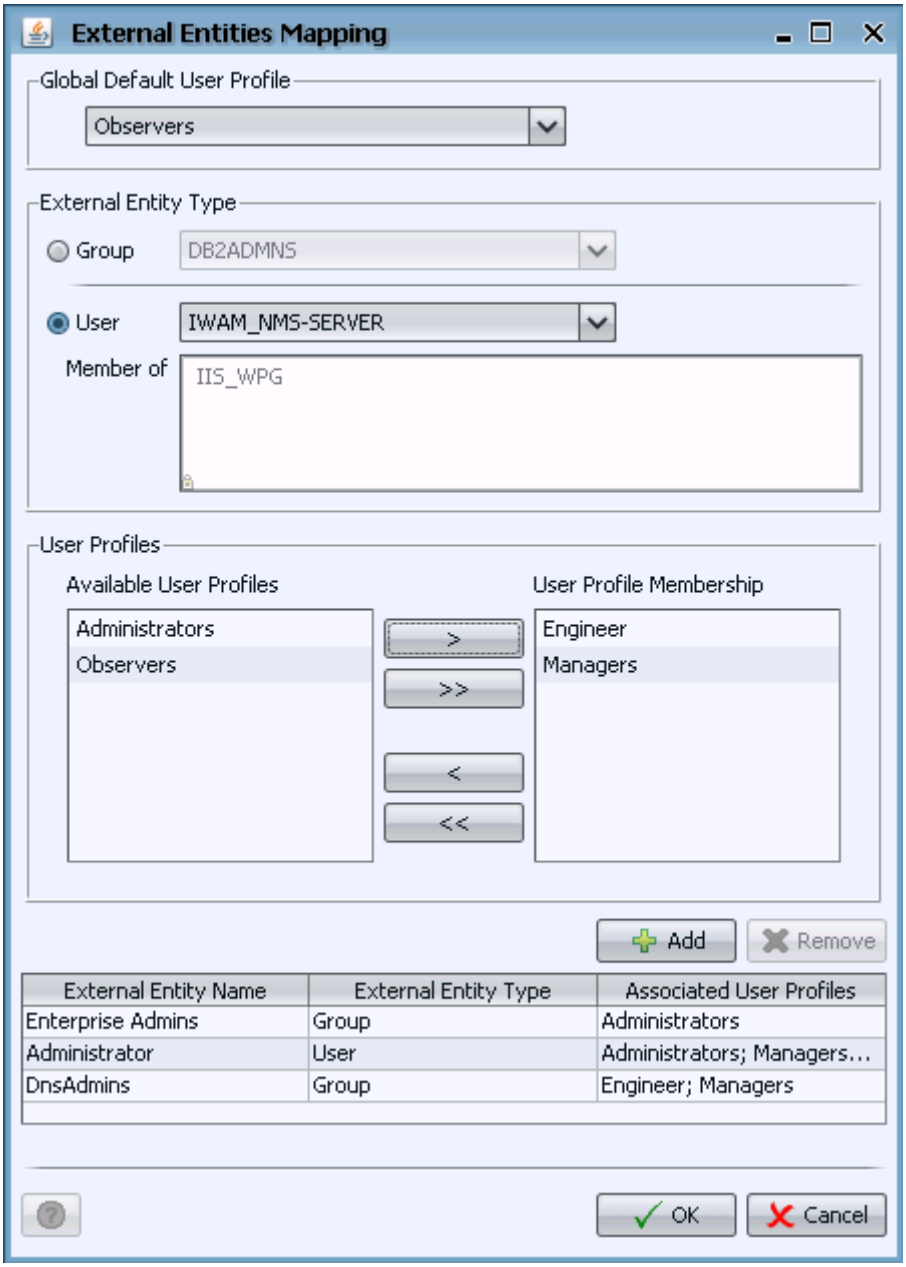


Figure 6-15: External Entities Mapping

Parameter	Description
Global Default User Profile	Use this drop box to allocate a default user profile to entities defined in the LDAP server that are not explicitly mapped to any user profile.

Parameter	Description
External Entity Type	Select an entity from the LDAP server that you wish to map to one or multiple user profiles. You can either choose: ■ A group of users, or ■ A specific user (in which case the group(s) it belongs to will be displayed below, in the *Member of* text box).
User Profiles	Select one or more user profiles you wish to map to the external entity. ■ Use the > button to map individual user profiles that are available ■ Use the >> button to map all the user profiles that are available ■ Use the < button to unmap individual user profiles that have been previously mapped ■ Use the << button to unmap all the user profiles that have been previously mapped

When you are done defining a mapping rule, click **Add** to confirm it. The rule will be visible in the mapping table.

To remove an active rule, select it from the mapping table and click **Remove**.

6.8 User Domain Manager

The User Domain Manager is used to allocate location visibility domains to each user that is not an administrator (administrators are always able to see all network elements in every location). A domain is a group of Network Elements that are located in one or multiple areas. Therefore, domains are defined by selecting specific locations that have been previously defined in the Location Manager.

NOTE

The User Domain Manager is enabled by default. If you want to disable it, follow these steps:

1 Go to *<NMS_Installation_Path>\jboss\server\nms\deploy\bwanms.sar\conf*

2 Edit the *appserver.properties* file

3 Look for the *com.bwanms.backend.domainmanagement.disable* entry

4 Change its value from *false* to *true*

5 Restart the NMS server

By default, users are not assigned to any domain, thus being able to see all network elements. A user who is assigned to a domain, can only view and manage the network elements and related objects inside that domain or the ones that have no domain associated. The following features are impacted:

- Equipment Manager
  - » Only equipment in the current users's domain and equipment not associated to any domain is visible
  - » All counters are computed according to the visible equipment
  - » Equipment selectors implement domain based filtering
- File Manager
  - » Only files pertaining to equipment in the current user's domain are visible
  - » Backup/restore tasks are limited to the applicable domain
  - » Imported files are visible to all users

- Active Events/Event History
  - » Only events pertaining to equipment in the current user's domain are visible
  - » All counters are computed according to the visible equipment
- Task Manager
  - » All tasks are displayed, but edit and run operations only work for equipment in the current user's domain
- Location Manager
  - » All locations are displayed, but only locations associated to the current user's domain can be edited

To open the User Domain Manager:

Select *Security Management* > *User Domain Manager* from the main menu. The User Domain Manager opens.

NOTE

The User Domain Manager is available only to users with administrator privileges.

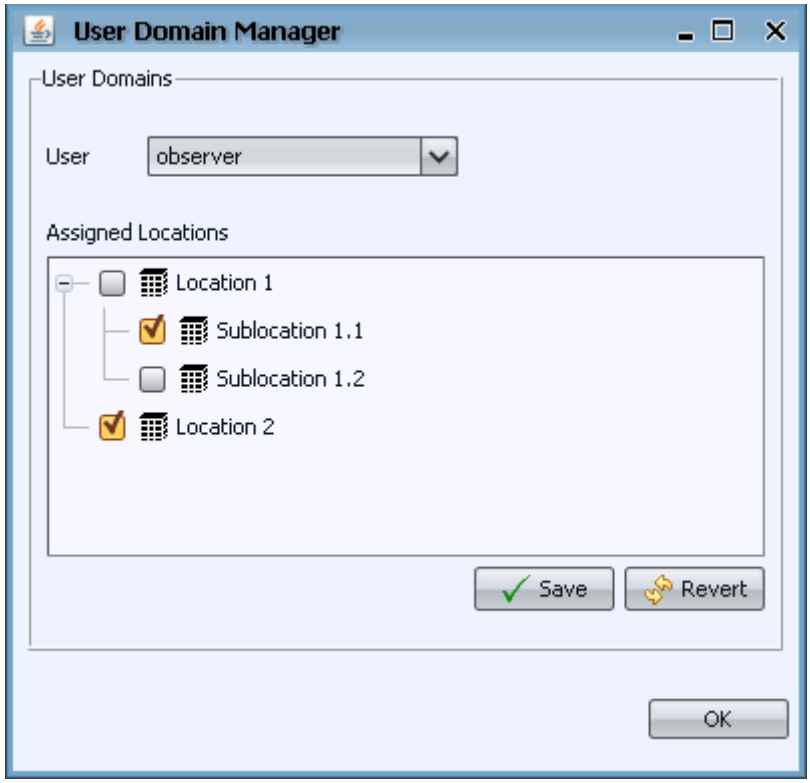


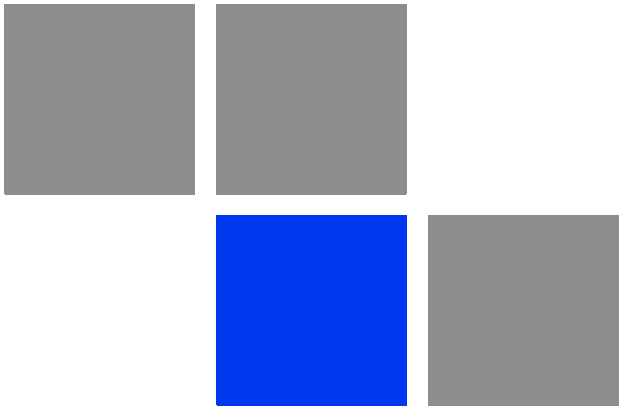
Figure 6-16: User Domain Manager

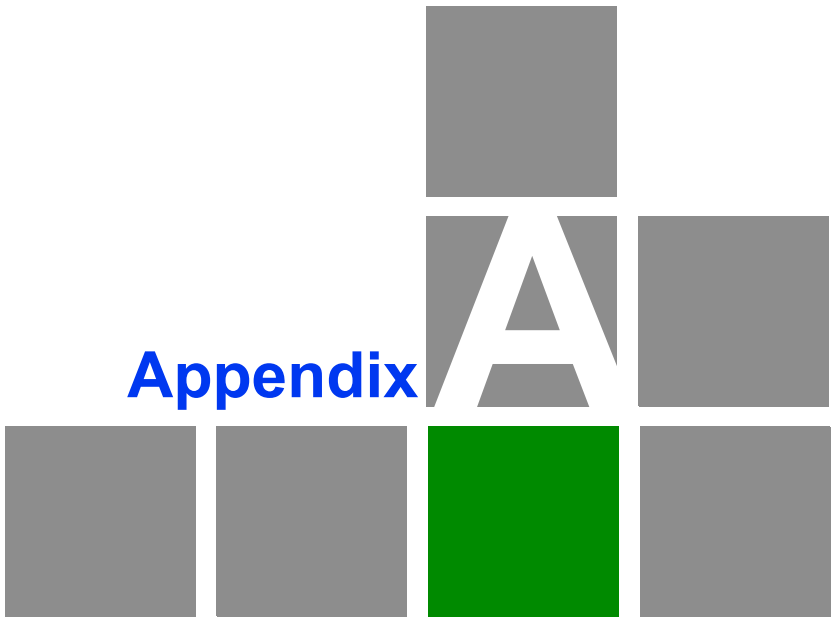
The User Domain Manager includes the following parameters:

Parameter	Description
User	Use the drop box to select a user you want to assign a domain. Administrators are not available.
Assigned Locations	Use the location tree to check the locations you want to be assigned to the user's domain.

Once you have defined a domain for a specific user, click the **Save** button to enable it. You can then switch to another user and start another domain definition process.

Clicking the **Revert** button resets the currently selected user's domain to the previously saved setting.





Appendix A

Watchdog

In This Appendix:

- "The Watchdog Application" on page 190

A.1 The Watchdog Application

Watchdog is an external application for monitoring the NMS server, LDAP and database servers (providing they reside on the same machine as the NMS). The NMS watchdog service is started when the NMS server is started.

In case the server or LDAP are down, Watchdog will try to restart them. The monitoring information and the actions involved in restarting the NMS server or LDAP are written in the *watchdog.log* file. The log is saved daily to *<Management System Root>\<NMS installation folder>\watchdog\watchdog.log.YYYY-MM-DD*

Watchdog can be configured from the *watchdog.properties* file located in *<Management System Root>\<NMS installation folder>\watchdog*.

Watchdog logs can be automatically deleted by configuring the following two parameters (in red text) in the *log4j.xml* file located in *<Management System Root>\<NMS installation folder>\watchdog*.

```
<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE log4j:configuration SYSTEM "log4j.dtd">

<log4j:configuration xmlns:log4j="http://jakarta.apache.org/log4j/">

  <appender name="LOG_SHRINK"
    class="com.bwanms.watchdogcommon.SizeShrinkAppender">
     <param name="File" value="${nms.root}/watchdog/log/dummy.log"/>
     <param name="MaxFileSize" value="10KB"/>
    <param name="MaxBackupIndex" value="1"/>
    <param name="RetainsDays" value="10"/>
    <!-- max log files size (ex.: 10KB, 20MB, 3GB, 100) -->
    <param name="MaxFilesSize" value="10MB"/>
    <layout class="org.apache.log4j.PatternLayout">
      <param name="ConversionPattern" value="%d %-5r %-5p [%c{2}] (%t:%x) %m%n"/>
    </layout>
  </appender>
      <appender name="FILE" class="org.apache.log4j.DailyRollingFileAppender">
```

```
<param name="File"
 value="${nms.root}/watchdog/log/watchdog.log" />

  <!-- Rollover at midnight each day -->
    <param name="DatePattern" value="'.'yyyy-MM-dd"/>

  <layout class="org.apache.log4j.PatternLayout">
    <param name="ConversionPattern" value="%d{ABSOLUTE} %5p %c{1} - %m%n"/>
  </layout>
</appender>

 <appender name="stdout" class="org.apache.log4j.ConsoleAppender">
    <layout class="org.apache.log4j.PatternLayout">
      <param name="ConversionPattern" value="%d{ABSOLUTE} %5p %c{1} -
 %m%n"/>
    </layout>
    <filter class="org.apache.log4j.varia.LevelRangeFilter">
      <param name="LevelMin" value="INFO" />
      <param name="LevelMax" value="INFO" />
    </filter>
 </appender>

<root>
  <priority value="INFO" />
  <appender-ref ref="FILE"/>
  <appender-ref ref="LOG_SHRINK"/>
  <appender-ref ref="stdout"/>
</root>

</log4j:configuration>
```

Appendix B

Remote Access

In This Appendix:

This appendix describes the alternative of accessing the NMS server via the Java Web Start software framework, without using the NMS client:

- "WebStart" on page 194
- "The Web Portal" on page 195

B.1 WebStart

You can access the NMS directly using Java Web Start, by employing the following procedure:

1 Open a browser and type the following URL:

```
http://<NMS IP address>:8080/webstart
```

2 The Download NMS Client page opens, allowing you to download a .jnlp file.

3 Once the download is complete, run it to start your application remotely.

NOTE

The Java Network Launching Protocol (JNLP) is part of the Java Runtime Environment (JRE). You need JRE 1.6 or higher in order to run the .jnlp file.

B.2 The Web Portal

The NMS server also runs a web portal that allows users to quickly access all the applications in StarSuite which are installed. To access the web portal:

1 Open a web browser and type the following URL:

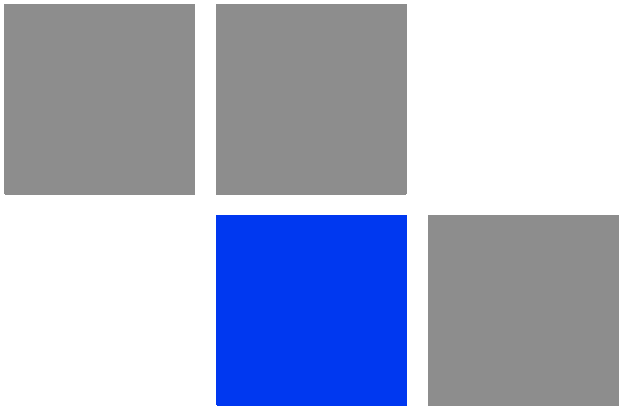
```
http://<NMS IP address>:8080/starsuite
```

The Web Portal interface is displayed

Figure B-1: The Web Portal

2 Click the desired application logo to launch it.

Selecting the NMS launcher, will take you directly to the Download NMS Client page, from where you can proceed as described above.



Appendix C

Connecting to an External LDAP Server

In This Appendix:

This appendix describes how to set up a connection to a typical LDAP server:

- "The LDAP Server Configuration File" on page 198
- "Open LDAP Configuration" on page 199
- "Active Directory Configuration" on page 200

C.1 The LDAP Server Configuration File

To set up the parameters for connecting to an external LDAP server:

1 Go to *<NMS path>\jboss\server\nms\deploy\bwanms.sar\conf*

2 Open the *external-ldap.properties* file.

3 Edit the LDIF entries in this file, so that they apply to the corresponding LDAP server.

See "Open LDAP Configuration" on page 199 and "Active Directory Configuration" on page 200 for examples on how to configure the external-ldap.properties file.

C.2 Open LDAP Configuration

The example below illustrates a typical configuration for connecting to an Open LDAP server (installed by default from the Solaris CD).

```
java.naming.factory.initial =
   com.sun.jndi.ldap.LdapCtxFactory

java.naming.provider.url = ldap://192.168.10.171:10389

java.naming.security.authentication = simple


rootDN = cn=Directory Manager

rootPW = nssecret


ldapSuffix = dc=testing,dc=ldap

principalCNPrefix = ou=

principalCN = People

principalDNPrefix = cn=

groupCNPrefix = ou=

groupCN = Groups

groupDNPrefix = cn=


userObjectClass = inetOrgPerson

groupObjectClass = groupofUniqueNames


usernameAttribute = cn

#accountNameAttribute = sAMAccountName

groupNameAttribute = cn

groupDescriptionAttribute = description

groupMembersAttribute = uniquemember
```

C.3 Active Directory Configuration

The example below illustrates a typical configuration for connecting to an Active Directory server.

```
java.naming.factory.initial =
   com.sun.jndi.ldap.LdapCtxFactory

java.naming.provider.url = ldap://192.168.10.120:389

java.naming.security.authentication = simple


rootDN = cn=Administrator,cn=Users,dc=nms,dc=local

rootPW = alpha


ldapSuffix = dc=nms,dc=local

principalCNPrefix = cn=

principalCN = Users

principalDNPrefix = cn=

groupCNPrefix = cn=

groupCN = Users

groupDNPrefix = cn=


userObjectClass = organizationalPerson

groupObjectClass = group


usernameAttribute = cn

accountNameAttribute = sAMAccountName

groupNameAttribute = cn

groupDescriptionAttribute = description

groupMembersAttribute = member
```

Appendix D

Google Earth Management

In This Appendix:

The following sections describe how you can visualize your network elements in Google Earth:

- "Connecting Google Earth to the NMS" on page 203
- "Viewing the Network Elements in Google Earth" on page 204

D.1 Connecting Google Earth to the NMS

The NMS server maintains information regarding the network elements' locations in a Keyhole Markup Language based (.kml) file. By linking to this file, Google Earth can use the information within to display your network's topography. For this purpose you need a computer with:

- Google Earth installed
- Access to the Internet
- Access to the NMS server

NOTE

It is not required for the NMS server itself to run on a computer with Internet access.

To populate Google Earth with the network elements defined in the NMS:

1. Open Google Earth
2. Go to Add > Network Link.
3. In the New Network Link window that opens, type the following path in the Link field:

   `http://<NMS path>:8080/bwanmsws/load.kml`

4. Fill in the remaining Google Earth options according to your preferences and click OK when done.

D.2 Viewing the Network Elements in Google Earth

Once Google Earth is synchronized with the NMS server, all viewable network elements will be displayed in the My Places section. The following network elements are visible in Google Earth:

- Network elements supporting GPS cards or the Chain Manager feature
- Network elements with latitude/longitude coordinates defined in Equipment Editor

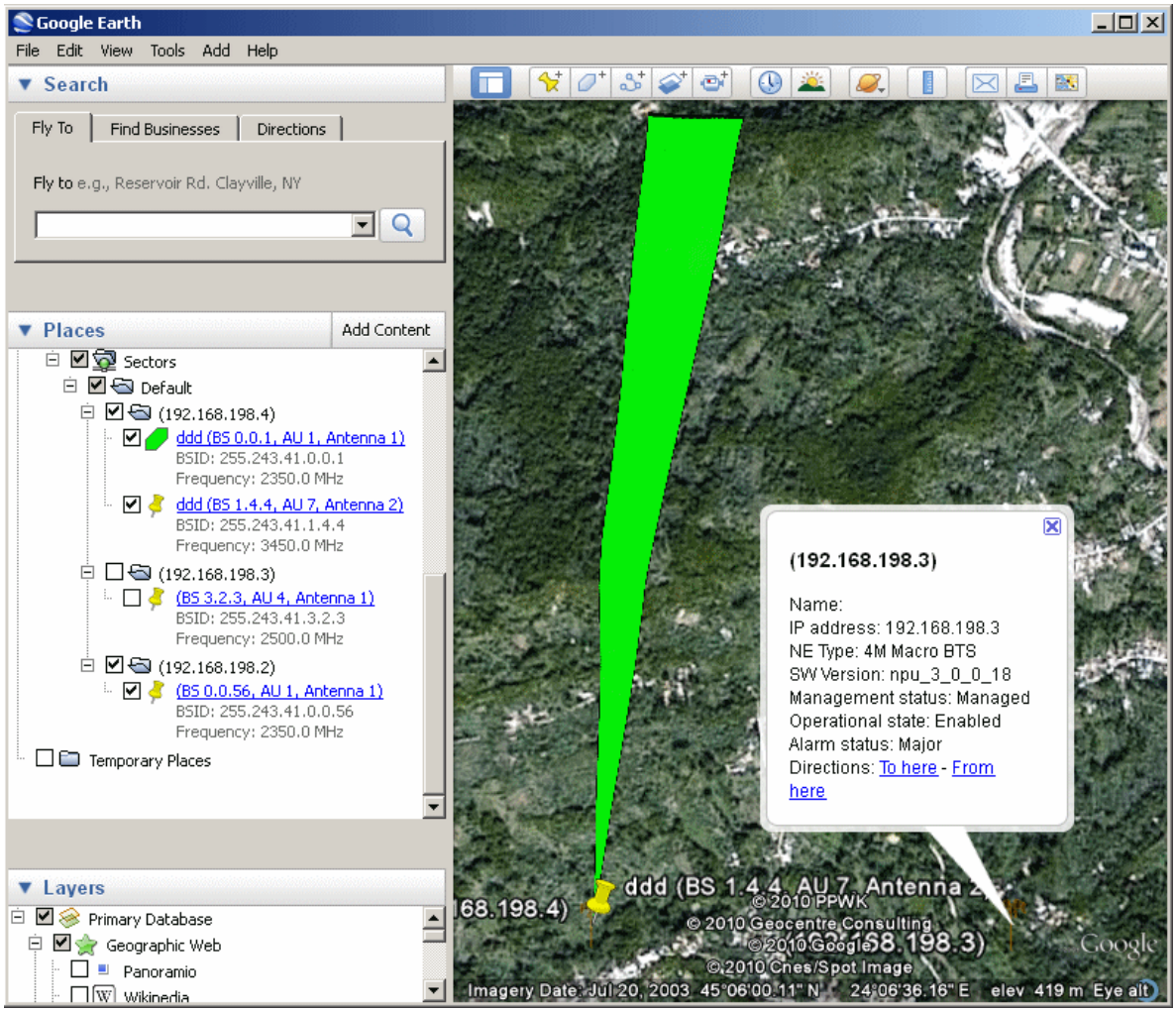
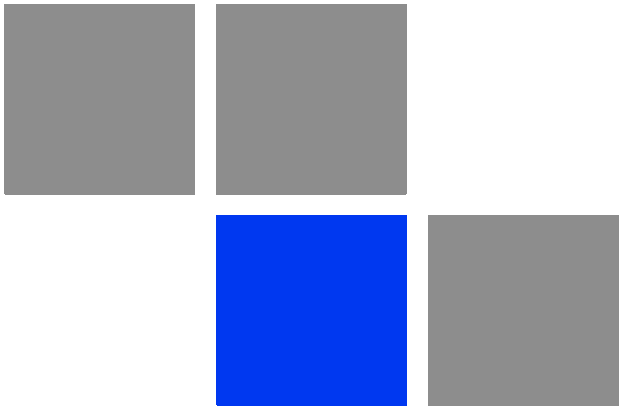


Figure D-1: Network Elements Displayed in Google Earth

When clicking on a network element, either in My Places or on the map, a callout containing information on the network element is displayed. The displayed information includes:

- Name, IP address, Type, Software version, Management status, Operational state - As displayed in Equipment Manager
- Alarm status - The network element's highest order alarm currently displayed in the Active Events manager. This alarm's color code will also determine the network element's icon color.

Where applicable, sector coverage information is also displayed by highlighting the covered area on the map.



Appendix E

SNMP Compatibility

In This Appendix:

This appendix lists the SNMP versions supported by each device

E.1 SNMP Version Compatibility

Each device managed by AlvariSTAR may supports one or more SNMP versions:

Table E-1: SNMP Compatibility for Each Device

Device Driver	SNMP v1	SNMP v2C	SNMP v3
4Motion	-	X	-
BreezeMAX FDD/TDD	X	-	-
BreezeMAX DM	X	-	-
BreezeACCESS Family	X	-	-
BreezeMAX Extreme	-	X	-
BNB 300	X (only read)	-	X
Outdoor Cabinet	X	-	-
AAA Server	X	X	X